FRYINGPAN-ARKANSAS PROJECT, COLORADO

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HEARINGS

BEFORE THE

SUBCOMMITTEE ON IRRIGATION AND RECLAMATION

OF THE

COMMITTEE ON INTERIOR AND INSULAR AFFAIRS HOUSE OF REPRESENTATIVES

EIGHTY-SIXTH CONGRESS

SECOND SESSION

ON

H.R. 9229, H.R. 9230, H.R. 9231, and H.R. 9232

BILLS TO AUTHORIZE THE CONSTRUCTION, OPERATION, AND MAINTENANCE BY THE SECRETARY OF THE INTERIOR OF THE FRYINGPAN-ARKANSAS PROJECT, COLORADO

JUNE 6 AND 7, 1960

Serial No. 24

Printed for the use of the Committee on Interior and Insular Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1960

56746

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FRYINGPAN-ARKANSAS PROJECT, COLORADO

MONDAY, JUNE 6, 1960

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met at 9:50 a.m., pursuant to call, in the committee room, New House Office Building, Hon. Wayne N. Aspinall presiding.

Mr. ASPINALL. The Subcommittee on Irrigation and Reclamation of the House Committee on Interior and Insular Affairs will be in session this morning to take testimony on H.R. 9229 by Mr. Aspinall, chairman of the full committee; H.R. 9230, by our colleague on the committee, Mr. Chenoweth; H.R. 9231 by Mr. Rogers of Colorado; and H.R. 9232 by Mr. Johnson of Colorado, to authorize the construction, operation, and maintenance by the Secretary of the Interior of the Fryingpan-Arkansas project, Colorado.

The report from the Department of the Interior is favorable, if the bills are amended. The report of the Agriculture Department is favorable, if the bills are amended.

Unless there is an objection, H.R. 9229 will be printed in the record together with the reports from the Departments of Interior and Agriculture and proper reference will be made to the other bills and the names of their sponsors.

The record should show that this legislation is sponsored at the present time by the entire congressional delegation from the State of Colorado.

(Documents referred to follow:)

[H.R. 9229, 86th Cong., 1st sess.]

A BILL To authorize the construction, operation, and maintenance by the Secretary of the Interior of the Fryingpan-Arkansas project, Colorado

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That, for the purposes of supplying water for irrigation, municipal, domestic, and industrial uses, generating and transmitting hydroelectric power and energy, and controlling floods, and for other useful and beneficial purposes incidental thereto, including recreation and the preservation and propagation of fish and wildlife, the Secretary of the Interior is authorized to construct, operate, and maintain the Fryingpan-Arkansas project, Colorado, in substantial accordance with the engineering plans therefor set forth in House Document Numbered 187, Eighty-third Congress, modified to substitute the Reudi Dam and Reservoir for the Aspen Dam and Reservoir as proposed in the September 1959 report of the Bureau of Reclamation entitled "Reudi Dam and Reservoir, Colorado", with such modifications of, omissions from, or additions to the works described in those reports as he may find necessary or proper for accomplishing the objectives of the project. Such modifications or additions as may be required in connection therewith shall not, however, extend to or contemplate the so-called Gunnison-Arkansas project. In constructing, operating, and main-

taining the Fryingpan-Arkansas project, the Secretary shall be governed by the Federal reclamation laws (Act of June 17, 1902; 32 Stat. 388, and Acts amendatory thereof or supplementary thereto).

(b) The reservoir at the Reudi site on the Fryingpan River with an active capacity of approximately one hundred thousand acre-feet shall be constructed in lieu of the reservoir on the Roaring Fork River at the Aspen site contemplated in House Document Numbered 187, Eighty-third Congress. The Secretary shall investigate and prepare a report on the feasibility of a replacement reservoir at or near the Ashcroft site on the Roaring Fork River above its confluence with the Fryingpan River with a capacity of approximately five thousand acre-feet, but construction thereof shall not be commenced unless said report, which shall be submitted to the President and the Congress, demonstrates the feasibility of said reservoir.

(c) No part of the specific municipal water supply works described in House Document Numbered 187, Eighty-third Congress, shall be constructed by the Secretary in the absence of evidence satisfactory to him that it would be infeasible for the communities involved to construct the works themselves, singly or jointly. In the event it is determined that the works, or any of them, are to be constructed by the Secretary, a contract providing, among other things, for payment of the actual cost thereof, with interest as hereinafter provided, as rapidly as is consistent with the contracting parties' ability to pay, but in any event, within fifty years from the time the works are first available for the delivery of water, and for assumption by the contracting parties of the care, operation, maintenance, and replacement of the works shall be a condition precedent to construction thereof.

SEC. 2. (a) Contracts to repay the portion of the cost of the Fryingpan-Arkansas project allocated to irrigation and assigned to be repaid by irrigation water users (exclusive of such portion of said cost as may be derived from temporary water supply contracts or from other sources) which are entered into pursuant to subsection (d), section 9, of the Reclamation Project Act of 1939 (53 Stat. 1187), as amended, shall provide for a basic repayment period of not more than sixty years and shall not provide for any development period. Such contracts shall be entered into only with organizations which have the capacity to levy assessments upon all taxable real property located within their boundaries.

(b) Rates charged for commercial power and for water for municipal, domestic or industrial use or for the use of facilities for the storage and/or delivery of such water shall be designed to return to the United States, within not more than fifty years from the completion of each unit of the project which serves those purposes, those costs of constructing, operating and maintaining that unit which are allocated to said purposes and interest on the unamortized balance of said construction allocation and, in addition, within the period fixed by subsection (a) of this section, so much of the irrigation allocation as is beyond the ability of the water users and their organizations to repay.

(c) The interest rate on the unamortized balance of the commercial power and municipal, domestic, and industrial water supply allocations shall be determined by the Secretary of the Treasury, as of the beginning of the fiscal year in which construction is initiated, on the basis of the computed average interest rate payable by the Treasury upon its outstanding marketable public obligations, which are neither due nor callable for redemption for fifteen years from date of issue.

(d) There shall be charged to the Fryingpan-Arkansas project $7,600,000 of the reimbursable construction costs of the Reudi Reservoir, or any substitute therefor, and said $7,600,000 shall be returned from revenues derived from the operation of other features of said project within the period provided in subsection (b) of this section. The remainder of the reimbursable construction costs of the Reudi and Ashcroft Reservoirs or substitutes therefor shall be returned as if they were participating projects under the Act of April 11, 1956 (70 Stat. 105), and all net revenues derived from their operation shall be paid into the Upper Colorado River Basin Fund as provided in section 5 of said Act.

SEC. 3. (a) The Fryingpan-Arkansas project shall be operated under the direction of the Secretary in accordance with the operating principles set forth in the above-mentioned reports.

(b) The Secretary may appoint the two representatives of the United States to the Commission referred to in paragraph 17 of said principles and may adopt modifications thereof upon the recommendation of the Commission in conformity to the provisions of paragraph 17 of said principles.

(c) Any and all benefits and rights of western Colorado water users in and to water stored in the Green Mountain Reservoir, Colorado-Big Thompson project, as described, set forth and defined in Senate Document Numbered 80, Seventy-fifth Congress, shall not be impaired, prejudiced, abrogated, nullified, or diminished in any manner whatever by reason of the authorization, construction, operation, and maintenance of the Fryingpan-Arkansas project.

(d) Except for such rights as are appurtenant to lands which are acquired for project purposes, no valid right to the storage or use of water within the natural basin of the Colorado River in the State of Colorado shall be acquired by the Secretary of the Interior through eminent domain proceedings for the purpose of storing or using outside of said basin the water embraced within that right, and no water, the right to the storage or use of which is so acquired by anyone other than the Secretary, shall be transported through or by means of any works of the Fryingpan-Arkansas project from the Colorado River Basin to the Arkansas River Basin.

SEC. 4. (a) The Secretary is authorized to plan, construct, operate, and maintain public recreational facilities on lands withdrawn or acquired for the development of the Fryingpan-Arkansas project, to conserve the scenery, the natural, historic, and archeologic objects and the wildlife on said lands, and to provide for public use and enjoyment of the same and of the water areas created by these projects by such means as are consistent with the primary purposes of said project and to mitigate losses of and improve conditions for the propagation of fish and wildlife in connection with the development of the Fryingpan-Arkansas project. The Secretary is authorized to acquire lands and to withdraw public lands from entry or other disposition under the public land laws for the construction, operation, and maintenance of recreational facilities in connection with the said project and to dispose of them to Federal, State, and local governmental agencies by lease, transfer, exchange, or conveyance, upon such terms and conditions as will best promote their development and operation in the public interest.

(b) The costs, including the operation and maintenance costs, of the undertakings described in subsection (a) of this section shall be nonreimbursable and nonreturnable under the reclamation laws, and funds appropriated for carrying out the authorization contained in section 1 of this Act shall, without prejudice to the availability of other appropriated moneys for the same purpose, also be available for carrying out the investigations and programs authorized in this section.

(c) All lands within the exterior boundaries of a national forest which are acquired for recreational or other purposes in connection with the Fryingpan-Arkansas project and which are determined by the Secretary of the Interior to be unnecessary for actual use for purposes other than recreation shall become national forest lands. The Secretary of the Interior shall make his determination hereunder with respect to any tract of land within five years from its acquisition by the United States.

(d) The authority to dispose of lands contained in subsection (a) of this section shall not be exercised by the Secretary of the Interior with respect to national forest lands without the concurrence of the Secretary of Agriculture.

SEC. 5. The Secretary is authorized to enter into an agreement with any public school district serving an area affected by construction of the Fryingpan-Arkansas project pursuant to which there will be paid to the district, annually or semiannually, from appropriations made for construction of the project, an amount substantially equal to the average per pupil cost of operating the district's schools during the school year or term for which payment is made, multiplied by the average number of pupils then enrolled in those schools who are dependents of persons brought into the project area who are engaged in project construction activities. This amount, however, shall be diminished by any payments made or anticipated to be made to the district pursuant to the Act of September 30, 1950, as heretofore or hereafter amended (20 U.S.C., ch. 13). The Secretary shall reduce further the contributions to the school districts in the amount of tax revenues received by the districts by reason of project activities. The Secretary may advance a reasonable portion of the amount estimated to become payable under any such agreement during the then current or ensuing school year or term, but any amount so advanced shall be subject to adjustment after the close of the year or term if it does not fully cover, or if it more than covers, the amount to which the district is found to be entitled under the first three sentences of this subsection. The Secretary is further authorized, without duplicating assistance to which any such district may be

entitled under the Act of September 23, 1950, as heretofore or hereafter amended (20 U.S.C., ch. 14), to make available funds or facilities to provide space in which to carry on educational and related activities.

SEC. 6. (a) The use of water diverted from the Colorado River to the Arkansas River Basin through works constructed under authority of this Act shall be subject to and controlled by the Colorado River Compact, the Upper Colorado River Basin Compact and the Mexican Water Treaty (Treaty Series 994), and shall be included within and shall in no way increase the total quantity of water to the use of which the State of Colorado is entitled and limited under said compacts, statute, and treaty, and every contract entered into under this Act for the storage, use, and delivery of such water shall so recite.

(b) All works constructed under authority of this Act, and all officers, employees, permittees, licensees, and contractees of the United States and of the State of Colorado acting pursuant thereto, and all users and appropriators of water of the Colorado River system diverted or delivered through the works constructed under authority of this Act and any enlargements or additions thereto shall observe and be subject to said compacts, statute, and treaty, as hereinbefore provided, in the diversion, delivery, and use of water of the Colorado River system, and such condition and covenant shall attach as a matter of law whether or not set out or referred to in the instrument evidencing such permit, license, or contract and shall be deemed to be for the benefit of and be available to the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming and the users of water therein or thereunder by way of suit, defense, or otherwise in any litigation respecting the waters of the Colorado River system.

(c) None of the waters of the Colorado River system shall be exported from the natural basin of that system by means of works constructed under authority of this Act, or extensions and enlargements of such works, to the Arkansas River Basin for consumptive use outside of the State of Colorado, and no such waters shall be made available for consumptive use in any State not a party to the Colorado River Compact by exchange or substitution; nor shall the obligations of the State of Colorado under the provisions of the Arkansas River Compact (63 Stat. 145) be altered by any operations of the Fryingpan-Arkansas project.

(d) No right or claim of right to the use of the waters of the Colorado River system shall be aided or prejudiced by this Act, and the Congress does not, by its enactment, construe or interpret any provision of the Colorado River Compact, the Upper Colorado River Basin Compact or the Mexican Water Treaty or subject the United States to, or approve or disapprove any interpretation of, said compacts, statute, or treaty, anything in this Act to the contrary notwithstanding.

(e) In the operation and maintenance of all facilities under the jurisdiction and supervision of the Secretary of the Interior authorized by this Act, the Secretary of the Interior is directed to comply with the applicable provisions of the Colorado River Compact, the Upper Colorado River Basin Compact, and the Treaty with the United Mexican States, in the storage and release of waters from reservoirs in the Colorado River Basin, and to comply with the laws of the State of Colorado relating to the control, appropriation, use, and distribution of water. In the event of the failure of the Secretary of the Interior to so comply, any State of the Colorado River Basin may maintain an action in the Supreme Court of the United States to enforce the provisions of this section and consent is given to the joinder of the United States as a party in such suit or suits, as a defendant or otherwise, and any person or entity whose rights may be affected. impaired, or infringed upon by reason or, as a result of such noncompliance, may maintain an action, suit, or proceeding in the United States District Court in and for the District of Colorado seeking appropriate relief, and consent is hereby given to the joinder of the United States, the Secretary of the Interior, and his subordinate officials, employees, and agents as a party or parties to such action, suit, or proceeding, as a defendant or otherwise.

SEC. 7. There is hereby authorized to be appropriated for construction of the Fryingpan-Arkansas Project (exclusive of expenditures provided for in section 5 of this Act) the sum of $170,000,000 (based upon September 1, 1959, prices), plus or minus such amounts, if any, as may be justified by reason of ordinary fluctuations in construction costs as indicated by engineering cost indexes applicable to the type of construction involved herein. Of the aforesaid sum, not more than $13,000,000 shall be available for construction of the Reudi Reservoir, or any substitute therefor, to be accounted for as provided in section

2(d) of this Act. There are also authorized to be appropriated such sums as may be required for operation and maintenance of the project and for expenditures as provided in section 5 of this Act.

U.S. DEPARTMENT OF THE INTERIOR,
Washington, D.C., March 25, 1960.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives,
Washington, D.C.

DEAR MR. ASPINALL: This is in response to your request for an expression of the views of this Department on H.R. 9229, H.R. 9230, and H.R. 9232, identical bills, and H.R. 9231, a similar bill, to authorize the construction, operation and maintenance by the Secretary of the Interior of the Fryingpan-Arkansas project, Colorado.

We recommend that any one of the bills be enacted, provided it is amended as hereinafter indicated.

The construction of the Fryingpan-Arkansas project has received the support of the President, who on numerous occasions, including his message to the Congress transmitting his budget for fiscal year 1961, has urged the prompt enactment of authorizing legislation to enable construction to get underway.

A rather full description of the engineering features of this proposed undertaking, of the purposes which it will serve, and of the benefits which will be associated with it is readily available in the report of the Department of the Interior on the project which was submitted on June 9, 1953, to the President of the Senate and the Speaker of the House of Representatives in accordance with the provisions of section 9(a) of the Reclamation Project Act of 1939 and which was printed as House Document 187, 83d Congress.

Since House Document 187 was printed, a number of changes in the project plan have been adopted which can be accommodated under the provisions of the legislation under consideration. A major modification is the substitution of Ruedi, and possibly Ashcroft, Dam and Reservoir for Aspen Dam and Reservoir. Other changes include the elimination of the water treatment plant at Pueblo, a change in the point of diversion for service to Colorado Springs, the addition of facilities to insure winter operation, and the withdrawal of certain lands from the Southeast Colorado Conservancy District. The effect of these changes and of changes in price levels and cost indexes on the physical plan and on the economic and financial aspects of the project are set forth in detail in the reevaluation statement, Fryingpan-Arkansas project, Colorado, January 1960, a copy of which is attached to and made a part of this letter.

For convenient reference by the committee, the purposes and expected accomplishments of the project may be summarized thus: The project contemplates (1) diversion through the project works from the Roaring Fork River Basin in western Colorado to the Arkansas River Basin in eastern Colorado of approximately 69,000 acre-feet of water per annum; (2) diversion through the existing works of the Twin Lakes Co. of about 15,000 acre-feet per annum over and above what that company now diverts; (3) construction of storage on the eastern slope for the waters thus imported and, in addition, for eastern slope floodwaters and winter flows averaging 50,000 and 93,000 acre-feet per annum, respectively. This plan will provide supplemental irrigation water for 280,000 acres of irrigated land in the Arkansas River Valley which do not now have an adequate water supply, and will supply expanding needs for municipal, domestic, and industrial water on both sides of the Continental Divide. The project will prevent a large part of the flood damages along the Arkansas River which, under present conditions, occur between Pueblo and John Martin Reservoir. In accomplishing these primary purposes of the project, works will be provided for the generation of about 469 million kilowatt-hours of hydroelectric energy annually.

As previously noted, the plan described in House Document 187 involved construction of Aspen Dam and Reservoir on the Roaring Fork River on the western slope of the Continental Divide. This reservoir, the cost of which was included in the cost of the project, was designed to protect the water supply of present and prospective western slope water users from any impairment through diversion of western slope waters to the Arkansas River Basin. Further studies have revealed that the same project purposes could be served from the proposed Ruedi Dam and Reservoir on the Fryingpan River and that that reser-

voir could also perform a further regulatory function on the Fryingpan River. Therefore, the plan now proposed includes Ruedi Reservoir in lieu of Aspen Reservoir.

A planning report demonstrating the feasibility and justification for providing regulatory storage in Ruedi Reservoir for Colorado River Basin uses has been transmitted to the Congress and is available for your consideration concurrently with this legislative report.

Since the proposed Ruedi Reservoir will be more costly than the previously proposed Aspen Reservoir, only that amount of the costs of Ruedi Reservoir which would have been incurred if Aspen Dam and Reservoir were built ($7,600,000) would be charged against the Fryingpan-Arkansas project. The remainder of the cost of Ruedi Dam and Reservoir ($5,231,000) is allocated to these purposes: municipal and industrial water supply, flood control, fish and wildlife and recreation uses in the Colorado River Basin. All or part of the active capacity of Ruedi Reservoir may be used for irrigation water storage if the need for water for that purpose develops before all the water from this source is used to meet municipal and industrial requirements.

The operating principles referred to in section 3 of the bills were first printed in House Document 187. They have since been modified and amended to conform with changes in the plan and to accommodate negotiated improvements. The modified operating principles, as amended December 30, 1959, are acceptable to this Department as a basis for project operation.

The area affected by the proposed project is an area containing outstanding fish and wildlife resources. The operating principles will safeguard the highly important sports fishery on the western slope by providing for certain specified minimum flows in the Roaring Fork and Fryingpan Rivers. This Department expects also to work out operating plans to protect, to the fullest extent practicable, the potentially important sports fishery resources in the headwaters of the Arkansas River on the eastern slope. This area is relatively close to population centers in east-central Colorado and is subject to heavy sportsmen's use. The inclusion of conservation and development of fish and wildlife as one of the purposes of the project listed in section 1 of the bills together with the authority provided in the substitute section 4(a) hereinafter proposed and in the Fish and Wildlife Coordination Act, as amended, will permit reasonable modification in the project plan for the conservation and development of fish and wildlife resources so that the entire project will be sound from the fish and wildlife standpoint. Such changes for the conservation and development of fish and wildlife resources as the Department may find desirable to make under the authority of the proposed legislation will be principally in the plan of operation, not of construction, of the project. Any one of the pending bills would provide the flexibility needed to carry out the investigations and planning for the conservation and development of fish and wildlife resources that are required in the post-authorization stage.

The pending bills would also provide for the construction, operation, and maintenance of public recreation facilities on lands withdrawn or acquired for the Fryingpan-Arkansas project. The costs associated with such facilities would be nonreimbursable. Our proposed substitute provision is patterned after section 8 of the Colorado River Storage Project Act (Public Law 485, 84th Cong.) and is in many respects similar to provisions found in other recent legislative authorizations. We encourage development of public recreation facilities on lands withdrawn or acquired in connection with the development of Federal reclamation projects. In the absence of one uniform national law governing the development of recreation resources, it is desirable that the merits of recreational development be considered in connection with each individual project.

The subject bills are identical with the exception that section 2(c) of H.R. 9231, which relates to the rate of interest, follows the comparable language of the Colorado River Storage Project Act (act of April 11, 1956, 70 Stat. 105) whereas section 2(c) of each of the other three bills follows the language of the Water Supply Act of 1958 (title III of the act of July 3, 1958, 72 Stat. 297). Since the provision in the Water Supply Act is the most recent expression of the Congress in legislation of general application and since it is expected there will be some contracts for project water under the authorty of that act, we would prefer the provision contained in H.R. 9229, H.R. 9230, and H.R. 9232 to that which appears in H.R. 9231 and we recommend that, if your committee should act favorably on H.R. 9231, it be amended to adopt the provisions of section 2(c) appearing in one of the other bills.

In our opinion certain provisions of the bills require modification and we recommend the adoption of amendments substantially as set forth below. In the interest of simplification, reference hereafter in this report will be made to H.R. 9229, although our recommendations would be equally applicable to the comparable provisions of the other bills.

1. It is recommended that the words "conservation and development" be substituted for the words "preservation and propagation" in lines 7 and 8, page 1, in order to conform the language of the bill to the language of the Fish and Wildlife Coordination Act.

2. In addition to its function of providing replacement capacity, it is contemplated that regulatory space in Ruedi Reservoir will be used for municipal and industrial water supply when required in connection with an expanding oil shale recovery industry. The portion of the space required for this purpose will, of course, depend upon the extent and timing of oil shale recovery. The cost allocated to municipal and industrial water supply is proposed to be handled under the deferment provisions of the Water Supply Act of 1958 (72 Stat. 319). In cases where capacity for future municipal and industrial water supply use is included, the act authorizes construction of such capacity without a contract under certain circumstances if there are obtained reasonable assurances from a State or local interests that they will contract for the use of storage for anticipated future demands within a period of time which will permit paying out the costs allocated to water supply within the life of the project but not to exceed 50 years from time of initial storage.

We attach a copy of a letter from the State of Colorado dated November 24, 1959, relating to this matter. In that letter the State of Colorado has indicated that it is willing to repay the costs of the capacity for future municipal and industrial water supply use to the extent that others do not. It is our view that prior to the initiation of construction the State of Colorado should by the enactment of appropriate State legislation, authorize its Colorado Water Conservation Board or other appropriate State agency to enter into appropriate contractual arrangements at such time as it may be necessary to carry out the assurances given by its reference letter of November 24, 1959. We believe the authorizing legislation should be amended to so provide by changing the period in line 16, page 2, to a colon and adding the following provisions:

"*Provided*, That actual construction of the works herein authorized shall not be undertaken until, by enactment of appropriate State legislation, the State of Colorado, the Colorado Water Conservation Board, or some other agency of the State is authorized to enter into contractual arrangements with the United States consistent with the terms and provisions of the Water Supply Act of 1958, to repay such costs of the Ruedi Dam and Reservoir as may be allocated to future municipal and industrial water supply use."

The final report of the State of Colorado was submitted on January 15, 1960.

3. Section 1(c) refers to the specific municipal water supply works described in H. Doc. 187. Since there have been changes in the plan of service to the municipalities, we suggest that lines 5 through 7, page 3, be amended to read as follows:

"No part of the single purpose municipal and industrial water supply works involved in the Fryingpan-Arkansas project shall be constructed by the Secretary in the".

4. Section 3(a) should be amended by deleting the words "set forth in the above mentioned reports" appearing in lines 20 and 21, page 5, and inserting in lieu thereof "adopted by the State of Colorado on April 30, 1959, and as amended on December 30, 1959".

5. As a corrective change, section 3(b) should be amended by substituting figure "19" for the figure "17" appearing in line 24, page 5, and in line 2, page 6.

6. In the interest of clarifying the provision in the legislation with respect to the inclusion of recreational facilities and the accomplishment of measures for the conservation and development of the fish and wildlife resources which would be affected by the project, we recommend that the following language which is patterned after section 8 of the Colorado River Storage Project Act of April 11, 1956 (70 Stat. 105), be substituted for that appearing in subsection 4(a):

"SEC. 4(a) The Secretary is authorized and directed to investigate, plan, construct, operate, and maintain (1) public recreational facilities on lands withdrawn or acquired for the development of said project, to conserve the scenery, the natural, historic, and archeologic objects, and the wildlife on said lands, and to provide for public use and enjoyment of the same and of the water areas created by these projects by such means as are consistent with the purposes of

said project; and (2) facilities for the conservation and development of fish and wildlife resources. The Secretary is authorized to acquire lands and to withdraw public lands from entry or other disposition under the public lands laws necessary for the construction, operation, and maintenance of the facilities herein provided, and to dispose of them to Federal, State, and local governmental agencies by lease, transfer, exchange, or conveyance upon such terms and conditions as will best promote their development and operation in the public interest."

7. The present project plan and cost estimate contain no features or items of cost for recreation and fish and wildlife on the eastern slope. Only $55,000 is included in the cost of Ruedi Dam and Reservoir for minimum basic recreation facilities. In the western slope collection system and continental divide tunnel, $2,081,000 is included in the estimate for incremental additions and capacity for the prevention of fishery losses. Because the addition of features and costs for these purposes on the eastern slope is anticipated, section 7 should contain an authorization for appropriations for such future costs to be incurred under section 4 in addition to the authorization contained therein. In addition, this section should contain specific provision with respect to the appropriation for the future investigation and construction costs of the potential Ashcroft Dam and Reservoir. Accordingly, we recommend that section 7 be amended to read as follows:

"There is hereby authorized to be appropriated for construction of the Fryingpan-Arkansas project, the sum of $170,000,000, of which not more than $13,000,000 shall be available for construction of Ruedi Dam and Reservoir or any substitute therefor to be accounted for as provided in Section 2(d) of this Act: *Provided*, That the amounts herein specified may be plus or minus such amounts, if any, as may be justified by reason of ordinary fluctuations in construction costs as indicated by engineering cost indexes applicable to the types of construction involved herein. There are also authorized to be appropriated such additional sums as may be required for operation and maintenance of the project, for future costs incurred under sections 4 and 5 of this Act, and for future costs incurred in connection with Ashcroft Dam and Reservoir."

In addition to the above, it should be noted that section 5 would provide public school district aid to care for dependents of persons brought into the project area who are engaged in project construction activities. This would be a substitution of full expenses for the partial assistance which could be provided under existing law. Such assistance may be considered to be justifiable in the case of country school districts which would revert to present conditions following construction. On the other hand, the required payments may be considered unreasonably large for schools in growing municipalities. However, we make no recommendations with respect to the form and extent of such proposed assistance.

Attached is a statement concerning estimated personnel and other requirements for the Fryingpan-Arkansas project as required in Public Law 801, 84th Congress.

The Bureau of the Budget has advised that there would be no objection to the submission of this report to your committee.

Sincerely yours,

ELMER F. BENNETT,
Under Secretary of the Interior.

COLORADO WATER CONSERVATION BOARD,
Denver, Colo., November 24, 1959.

Re 735—Fryingpan-Arkansas project, Colorado.

Hon. FRED A. SEATON,
Secretary of the Interior, Interior Building, Washington, D.C.

DEAR MR. SECRETARY: In accordance with the provisions of section 1(c) of the Flood Control Act of December 22, 1944 (58 Stat. 886), this office has reviewed your proposed report of September 1959, on the Ruedi Dam and Reservoir as a part of the Fryingpan-Arkansas project in Colorado. Since the State of Colorado rendered material assistance in the preparation of this report, we are already familiar with the details contained therein. This report meets the full and unequivocal approval of the State of Colorado and we are extremely grateful to the Bureau of Reclamation for the expeditious manner in which this report was prepared.

Your proposed report indicates that the total reimbursable investment allocated to municipal and industrial water supplies for use in Colorado west of

the Continental Divide, can be reasonably expected to be repaid with interest under the provisions of the Water Supply Act of 1958, Public Law 85–500. Your proposed report notes further that in the absence at this time of agencies or organizations qualified to contract for repayment of the cost assigned to such deferred municipal and industrial water supply, it will be necessary that the State of Colorado, prior to transmittal of this report to the Congress, furnish assurance as to future repayment as required by the Water Supply Act of 1958.

It is the purpose of this letter to furnish such assurance. We anticipate, as does your report, that commercial development of Colorado's oil shale reserves will create a future market for the municipal and industrial water supply that would be provided by Ruedi Dam and Reservoir. Should such a market, however, not develop to a degree sufficient to return the costs allocated to municipal and industrial water supply, the State of Colorado will undertake repayment of the portion necessary to assure full repayment of municipal and industrial water supply cost.

The proposed report pointed out certain discrepancies between the operating principles adopted for the Fryingpan-Arkansas project by the State of Colorado with certain provisions of reclamation law and policy. These apparent inconsistencies have been reviewed with the staff of the Bureau of Reclamation and we anticipate that these operating principles will be revised to meet the objections pointed out to us. It is anticipated that these revised operating principles will be in your hands within the next 30 days.

Very truly yours,

FELIX L. SPARKS, *Director.*

FRYINGPAN-ARKANSAS PROJECT

Estimated additional man-years of civilian employment and expenditures for the 1st 5 fiscal years (as required by Public Law 801, 84th Cong.)

	1st year	2d year	3d year	4th year	5th year
Estimated additional man-years of civilian employment:					
Executive direction					
Administrative services and support:					
Clerical	12.75	6	3.0		
Personnel	1.0				
Total, administrative services and support	13.75	6	3.0		
Substantive (program):					
Engineers	23.5	7	2.0		
Engineering aids	24.75	28	20.5		
Geologists		2	.5		
Agriculturists	1.0				
Economists	.5				
Land appraisers and negotiators	1.5				
Total, substantive	51.25	37	23.0		
Total, estimated additional man-years of civilian employment	65.0	43	26.0		
Estimated additional expenditures:					
Personal services	$319,971	$191,659	$109,808		
All other	465,945	5,853,082	11,193,348	$15,233,812	$19,710,556
Total, estimated additional expenditures	785,916	6,044,741	11,303,156	15,233,812	19,710,556

DEPARTMENT OF AGRICULTURE,
Washington, D.C.

Hon. WAYNE N. ASPINALL,
Chairman, Committee on Interior and Insular Affairs,
House of Representatives.

DEAR CONGRESSMAN ASPINALL: This is in reply to your letter of September 15, 1959, requesting a report on H.R. 9229, H.R. 9230, H.R. 9231, and H.R. 9232, identical bills, to authorize the construction, operation, and maintenance by the Secretary of the Interior of the Fryingpan-Arkansas project, Colorado.

The President in his budget message of January 1960 again recommended that the Congress authorize the Fryingpan-Arkansas project in Colorado. This De-

partment has no objection to these bills, but does object to section 4 unless amended as recommended herein.

Our position and the amendments recommended below are the same as those twice recommended to you formerly and adopted by your committee. Our former recommendations were contained in our letters of (1) April 3, 1957, on H.R. 594, 85th Congress, relating to the Fryingpan-Arkansas project, and which were adopted by your committee in reporting H.R. 13523 to the House, which bill also related to the Fryingpan-Arkansas project, and (2) April 22, 1959, to you on H.R. 1235, a bill relating to the Burks Creek project, Upper Snake River Valley, Idaho. These amendments were included also in S. 60 as passed the Senate on June 27, 1957, which bill was the Senate companion to H.R. 594, 85th Congress, and in S. 281 as passed the Senate on July 24, 1959, which bill is the Senate companion to H.R. 1235.

Subsection (a) of section 4 would authorize the Secretary of the Interior to (1) plan, construct, operate, and maintain public recreational facilities on lands withdrawn, including national forest lands, or lands acquired for the development of the Fryingpan-Arkansas project, including those acquired within national forest boundaries; (2) conserve the scenery, the natural, historic, and archeologic objects and the wildlife on said lands; (3) provide for public use and enjoyment of same and of the water areas created by these projects by such means as are consistent with the primary purposes of said project; and (4) mitigate losses of and improve conditions for the propagation of fish and wildlife in connection with the development of the project. Subsection (a) would authorize the Secretary of the Interior also to acquire lands, including those within national forest lands, from entry or other disposition under the public land laws for recreational purposes and to dispose of them to Federal, State, and local governmental agencies by lease, transfer, exchange, or conveyance, upon such terms and conditions as would best promote their development and operation in the public interest.

The bills (sec. 4(c)) would provide further that lands within the exterior boundaries of a national forest which are acquired for recreational or other project purposes and determined by the Secretary of the Interior to be not needed for actual use in connection with the reclamation works would become national forest lands except those acquired for recreational purposes. In addition, section 4(d) would provide that the authority to dispose of withdrawn lands which would be granted by subsection (a) of section 4 could not be exercised by the Secretary of the Interior with respect to national forest lands without the concurrence of the Secretary of Agriculture. This means that the Secretary of the Interior could (1) develop and administer those lands within the exterior boundaries of a national forest which were acquired for recreational purposes, and (2) withdraw national forest lands and administer them for recreational purposes.

The authorization which the bills would grant to the Secretary of the Interior to plan, construct, operate, and maintain recreational facilities on national forest lands within reclamation withdrawals in connection with the Fryingpan-Arkansas project would result in duplication of authority between the Departments of the Interior and Agriculture, and would lead to confusion unless clarified. The Secretary of Agriculture already has authority to manage these national forest lands, so long as such use does not conflict with major project purposes and is now developing and administering them, not only with respect to recreation but also for timber, grazing, wildlife habitat, and other resources. This Department is developing the national forests under a policy of integrated multiple use, whereas the authority that would be granted the Secretary of the Interior under section 4 would pertain only to recreation.

Under a memorandum of understanding entered into in January 1948 between the Bureau of Reclamation of the Department of the Interior and the Forest Service of this Department, it was agreed that the Forest Service would continue to administer national forest lands within a reclamation withdrawal for nonreclamation purposes whenever such lands were not in actual use in connection with any reclamation works. This memorandum of understanding has provided a satisfactory division of responsibility which should be continued.

The Department of Agriculture believes that it should administer the recreational facilities on national forest lands withdrawn for recreation or for reclamation project purposes whenever such lands are not in actual use in connection with the reclamation works. It objects to legislation which would give duplicating authority in this respect to the Secretary of the Interior.

The Department of Agriculture also believes that within exterior boundaries of the national forests, nonnational forest lands acquired for recreation in connection with reclamation projects as well as those acquired for other reclamation purposes and not needed for actual use in connection with reclamation works should become national forest lands. These lands and the resources thereof should be administered by the Secretary of Agriculture, subject to project uses, as ordinary national forest lands. This would include the recreational facilities thereon. We believe such lands can be most effectively and economically administered as national forest lands by the Department of Agriculture because of their intermingling with nearby and adjoining national forest lands and because they are of national forest character.

The recommendations of this Department can be accomplished by striking on page 8 all of subsections (c) and (d) of section 4, and by changing the period on page 7 at the end of subsection (a), line 18, to a colon and adding thereto the following: "*Provided*, That all lands within the exterior boundaries of a national forest acquired for recreational or other project purposes which are not determined by the Secretary of the Interior to be needed for actual use in connection with the reclamation works shall become national forest lands: *Provided further*, That the Secretary of the Interior shall make his determination hereunder within five years after approval of this Act or; in the case of individual tracts of land, within five years after their acquisition by the United States: *And provided further*, That the authority contained in this section shall not be exercised by the Secretary of the Interior with respect to national forest lands without the concurrence of the Secretary of Agriculture."

The Bureau of the Budget advises that there is no objection to the submission of this report.

Sincerely yours,

TRUE D. MORSE,
Acting Secretary.

Mr. ASPINALL. The meetings today and tomorrow have been scheduled to take testimony on the several bills to authorize the Fryingpan-Arkansas project. This, of course, is not a new subject for this committee. In the 83d Congress, the committee held 3 days of hearings on June 8, 9, and 10, 1953.

In the 84th Congress, the committee held hearings on May 9, 11, 12, and 18, and July 1 and 16, 1955. In the 85th Congress, the committee held hearings on May 9 and 10, and July 19 and 25, 1957. Also in the 85th Congress, the committee held a field hearing in El Centro, Calif., on October 4, 1957. This committee has twice favorably reported Fryingpan-Arkansas legislation to the House. So, in a way, this is an old subject. However, there are some new aspects involved.

The plan has been revised to eliminate the controversial Aspen Reservoir and in lieu thereof to include the Reudi Reservoir, which would not only supply water for transmountain diversion to the Arkansas Basin but would furnish water for additional use in western Colorado. I hope that the testimony we receive, both from the Department and from the local witnesses, will be directed to bringing us up to date with respect to the revised plan and with respect to the economic aspects of the project.

Once again, the chairman wishes to state that in his opinion it is too late in the session for this committee or for Congress, particularly for the House of Representatives, to favorably consider this legislation during this session. We have been caught with this legislation at various time in the past during the last days of Congress when the emotions and passions of the Members were pretty much in evidence and, as far as I am concerned, I do not believe that the legislation has as yet had a fair opportunity for presentation on the floor of the House.

Accordingly, this will be testimony so that we will be in position, providing we can get this particular matter within the necessary rules and regulations and policies of reclamation, to bring it up at the beginning of the next Congress.

At this time, the Chair would ask his colleague from southeastern Colorado if he has any statement he wishes to make.

STATEMENT OF HON. J. EDGAR CHENOWETH, A REPRESENTATIVE FROM THE STATE OF COLORADO

Mr. CHENOWETH. Mr. Chairman and fellow members of the committee, I appreciate the opportunity to present this brief statement in support of the bills authorizing the construction of the Fryingpan-Arkansas transmountain water diversion project in Colorado. This is the fourth time that I have appeared before this committee in support of this project. Hearings were held in the 83d, 84th, and 85th Congresses on similar bills. In each Congress this committee favorably reported the bill authorizing this project. Unfortunately, as you said, Mr. Chairman, these bills were reported late in the session and there was insufficient time to obtain consideration by the House.

The presence here today, Mr. Chairman, of this large number of witnesses from Colorado, from both the western slope and the eastern slope, presenting a united front indicates the great interest in Colorado in this project. This interest dates back, Mr. Chairman, for a period of more than 20 years, and the need for the project is just as real and compelling today, and perhaps even more so, than it was then.

I have just returned from a short trip to Colorado and I had the opportunity to meet with a number of farmers and stockmen in the Arkansas Valley. They all told me the same story—it begins to look like they are going to be short of water again this year. I wish to emphasize the fact we desperately need this project which will take the surplus water from the west slope and bring it to the east slope, where it will be available when most needed.

I am happy to advise the committee that the State of Colorado is now for the first time presenting a united front on this legislation. In past hearings, the State has been divided, as between the east and west slopes on this proposal, which has in a large measure accounted for the failure of this project to be approved by the House.

Last year the water groups of both the east and west slopes were able to get together on the terms of this project, and agreed on a bill. You will observe from the witnesses who appear that there is now no division in our ranks so far as this project is concerned.

As a result of this agreement on the Fryingpan project, each member of the Colorado congressional delegation introduced identical bills in the House on September 12, 1959, in the closing days of the 1st session of the 86th Congress. Similar bills were introduced in the Senate by Colorado Senators Allott and Carroll. At the previous hearings I have been the sole sponsor of this legislation in the House. I am now very pleased that my colleagues from Colorado, Mr. Aspinall, the distinguished chairman of our full committee, Mr. Rogers, and Mr. Johnson have joined with me in sponsoring this project.

Most of the committee members are familiar with the project and some have personally visited the site in Colorado. Some of you have

participated in the three previous hearings. Every effort will be made to give the new members of the committee full and complete information on the project.

This project provides for the transmountain diversion of water from the west slope to the east slope of Colorado. The water is taken from the Colorado River Basin and will be used in the Arkansas Valley of Colorado. The transmittal letters and details of the project are contained in House Document 187 of the 83d Congress. New operating principles were agreed upon with the inclusion of the Reudi Dam, and these are included in the report on that project, which is now being printed.

This is a multiple-purpose project and provides for supplemental irrigation water, municipal water, electric power and flood control, as well as fish and wildlife benefits. Under the project the Arkansas Valley in Colorado will have about 183,000 acre-feet of additional water, of which 70,000 acre-feet will be new water diverted from the west slope into the Arkansas Valley. Three reservoirs will capture intermittent floodflows of the Arkansas River and thereby make it possible to reregulate this water.

The present estimated cost of the project is $169,905,000 which includes the entire cost of the Reudi Reservoir, in the amount of $12,831,000. Of this amount, $7,600,000 will be charged to the Fryingpan project, as this was the cost of the Aspen Reservoir. The difference in the amount of $5,231,000 will be allocated to the power revenues of the Colorado River Storage Act.

This project will make additional electrical energy available to southern Colorado. There is now a shortage of power in this area. I have three rural electric cooperatives with offices in my district, and a fourth which has customers in the district. These REA cooperatives are seeking additional power, and have given this project their enthusiastic support. There will be a ready market for all of the power generated by the seven hydroelectric plants included in this project. This project has the support of the National Rural Electric Cooperative Association, and the Colorado State Association. The project is also supported by the Southern Colorado Power Co., and the Public Service Co. of Colorado, the private utilities serving this area.

Some changes have been made in the specifications of the project since the last hearing, which will be explained by witnesses to follow.

The most important of these changes is the substitution of the Reudi project on the western slope for the Aspen Reservoir. As the members of the committee will recall, the inclusion of the Aspen Reservoir in previous bills resulted in the opposition of residents of the Aspen area to the project. With the elimination of the Aspen Reservoir this opposition has now been removed.

I feel that we have a better project because of this change. The Aspen Reservoir was a compensating reservoir to protect the water users of the western slope and had a capacity of 28,000 acre-feet. The Reudi Reservoir has a storage capacity of 100,000 acre-feet, and will be of far greater benefit to the water users of the western slope. The present project is the best project that has been worked out in my opinion, and is preferable to the projects previously approved by the committee.

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Another important development since the last hearing is the creation of the Southeastern Colorado Water Conservancy District, which has been organized under the laws of the State of Colorado. This district comprises the lands which will be served with supplemental irrigation water under this project, and consists of some 280,000 acres. The district also includes the cities of Colorado Springs and Pueblo, and other towns and cities in the Arkansas Valley, which will receive municipal waters.

This conservancy district is the legal entity which will sign the repayment contract with the Federal Government on this project. It is now functioning and is being financed by a 0.4 of a mill levy on all of the property included in the district. The district has a most competent set of officers and a fine board of directors, and is being well managed. The office is located at Pueblo, where monthly meetings of the board are held. The president of the district, Mr. J. Selby Young, of Colorado Springs, will be a witness at this hearing.

Mr. Chairman, I again want to make it crystal clear that this is a Colorado project, and that the water of no other State is involved. We are using water that has been allocated to the State of Colorado under the Colorado River compact, and the upper Colorado River compact. Not a drop of this water belongs to any other State, and the operation of the project will not affect the water supply of any other State, either in the upper or lower basin.

The State of Colorado has been allocated 3,855,000 acre-feet of water under the upper Colorado River compact. Less than half of this amount is now being used in Colorado, which leaves the diversion of 70,000 acre-feet well within Colorado's allocation. I might state that Colorado furnishes some 70 percent of the water in the Colorado River, and certainly we should be permitted to use 70,000 acre-feet of our own water by means of this project. This water will be diverted from the west slope to the east slope and will be put to beneficial use in the Arkansas Valley, where a serious shortage of water now exists. I wish to state that this 70,000 acre-feet of water is surplus to the needs of the western slope.

In previous hearings, I have tried to impress upon the committee the importance of this project to the Arkansas Valley in Colorado. This area is desperately short of water, and it is the purpose of this project to supply supplemental water for irrigation, and to make water available for domestic use to the different towns and cities which need additional municipal water.

I want to emphasize this point, that no new land will be brought under cultivation under this project, and that for the most part the crops raised on this land are not in surplus at this time. The supplemental water which this project will provide will, in many cases, mean the difference between a good crop, and no crop at all.

Mr. Chairman, this project has had the approval of two administrations, one Democratic and one Republican. The project report was first approved by Mr. Oscar L. Chapman, a Democrat, then Secretary of the Interior, on May 4, 1951. It has subsequently been approved by two Republican Secretaries, Mr. Douglas McKay and Mr. Fred L. Seaton.

This project has had the support of President Eisenhower, who has repeatedly urged Congress to authorize the same. In his latest budget

message to Congress in January of this year, he again recommended the approval of this project. In a special message on May 3, 1960, the President listed legislation which he recommended for passage at this session of Congress, and he again mentioned that he would like to see the Fryingpan project authorized this year.

The Fryingpan project has the unanimous approval of the Colorado Water Conservation Board, which speaks officially for the State of Colorado on all water matters. Mr. Felix L. Sparks, executive director of the board, will appear at the hearing and advise of the action taken by the board. I wish to take this opportunity to pay tribute to Mr. Sparks for the fine job he did in working out the agreement on this project between the water users of the east and west slopes. It is largely through his efforts that Colorado is today presenting a united front on this project for the first time.

Mr. Chairman, I thank you and the committee for holding this hearing. I urge the committee to again approve the Fryingpan-Arkansas project and report the bill favorably to the full committee.

Mr. ASPINALL. At this time, the Chair calls upon his colleague, the gentleman from the First District of Colorado, Mr. Rogers, for any statement he may wish to make.

May the Chair make this statement: it is a pleasure for the chairman of the full committee, acting chairman of the subcommittee this morning, to welcome his friend and coworker of many, many years before this committee.

STATEMENT OF HON. BYRON ROGERS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. ROGERS. Thank you, Mr. Chairman. I trust I will not take up too much of your time here because as we know, the Fryingpan-Arkansas legislation has received a great deal of consideration in the past and I believe its feasibility and the need of the water to the Arkansas Valley in the southeastern part of the State has been established from time to time. We in Colorado, I believe, are united in the efforts to bring about the enactment of this legislation.

However, as indicated by the chairman, it is a little late in this session to get any action at this time.

I believe a significant thing has happened since we last considered this legislation, which should remove some opposition that has arisen heretofore. I refer particularly to southern California. Because if the master's report in the case of *Arizona* v. *California* is sustained by the Supreme Court, then I see no reason why we should have any further opposition from southern California for the simple reason that the master's report said what we always had contended, that the State of California, by its own statute of limitation, has set the amount of water that they may be able to use out of the Colorado River and, hence, if that master's report is upheld then the portion that is allocated to Colorado will be used and can be transferred out of the basin without any effect upon the southern Californians and, therefore, in all fairness I believe if they analyze this that they should withdraw their objection.

I do not want to take up too much more time of the committee but I urge that you report this legislation, or make a record so that we can enact this some time in the near future.

Thank you so much.

Mr. ASPINALL. Thank you very much, Mr. Rogers.

Mr. CHENOWETH. Mr. Chairman, I want to join you in extending this welcome to our colleague from Colorado. He is a former resident of the Arkansas Valley and has personal knowledge of the need for this project on the Arkansas River. So, we are delighted to have you here.

I hope that your prediction as to the attitude of southern California is correct, I might say.

Mr. ROGERS. I may say, if the master's report is sustained, their rights are absolutely assured, ours have been set out, and so we should not have to fuss with them any more.

Mr. CHENOWETH. I hope time proves you to be a good prophet.

Mr. ROGERS. Thank you.

Mr. ASPINALL. At this time, the chairman would call to the witness stand the newest member of the Colorado delegation, the gentleman from the second district, who has fitted himself very nicely and effectively into the work of the Congress for Colorado and on matters relating to the Upper Colorado River program.

STATEMENT OF HON. BYRON L. JOHNSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. JOHNSON. Mr. Chairman, I come before this committee to urge passage of legislation which I am proud to cosponsor, H.R. 9232, to establish the proposed Fryingpan-Arkansas project in southern Colorado.

This imaginative, yet practical project will provide much needed water for the supplemental irrigation of rich land in the beautiful Arkansas Valley. The project will also provide electricity and will be a constant source of outdoor recreation.

Multipurpose projects such as the Fryingpan-Arkansas benefit both Colorado and the entire Nation. The residents of my own Second Congressional District in northeastern Colorado know from first-hand experience what such multipurpose projects can mean to the economy and development of a growing area. Let me tell you this story of progressive, prosperous Americans in action.

In the late 1860's and 1870's, settlers and farmers were flocking toward the high Rocky Mountains of Colorado to replace the Indians and fur-trapping mountain men.

Irrigation in the area near Greeley, Colo., first began around 1860 along the stream bottom lands. In 1870, the Union Colony sponsored by Horace Greeley, constructed ditches from the Cache la Poudre River in the vicinity of Greeley. The colony irrigated some 12,000 acres so successfully that other projects soon followed.

By 1900, practically all the irrigated area had been developed and direct stream flow overappropriated. An era of reservoir construction followed, to store spring flood waters for summer use and by 1910 most of the suitable plains reservoir sites were developed. The Coloradoans then began to give serious thought to an earlier dream for

tapping the headwaters of the Colorado River water for use in northeastern Colorado.

In 1935, WPA funds were allocated to the Bureau of Reclamation to conduct surveys and to report on the feasibility of such a diversion. The Northern Colorado Water Conservancy District was organized in 1937 to contract for the use of the project water. And so the dream of a far-sighted people finally came into being and the Colorado-Big Thompson project was born.

Actual project construction began in 1938 at Green Mountain Dam. Although work was drastically curtailed during the war, water was delivered from the Colorado River through the Continental Divide in the 13.1 mile Alva B. Adams Tunnel to the Big Thompson River on June 23, 1947; to the Cache la Poudre River in 1951; and to the St. Vrain Creek in 1954. Electric energy was first generated in 1943 at Green Mountain powerplant. All authorized features of the project were finished in 1959 with the completion of the Big Thompson powerplant.

The Big Thompson project is now collecting, storing, regulating and diverting surplus water of the upper Colorado River for supplemental irrigation in the South Platte River Basin. Electricity is generated by falling water. At Estes Park alone, the three pipes on the hillside give a head of water equal to Hoover Dam in the southwest at Lake Mead.

This wondrous example of the cooperation which is possible between man and nature has stabilized the agriculture and industrial economy of northeastern Colorado. It is particularly effective each year during the late summer months of the irrigation season, and has a tremendous impact throughout the season in drought years.

Incidentally, the area was hard hit by drought before the project had been completed, but it did enough to add an estimated $24 million to crop value in one drought year. At full capacity, the system reservoirs could provide 50 percent of irrigation needs for 6 drought years in a row.

Supplemental irrigation service is provided for an area of some 700,000 acres which have a crop value of over $71 million. The increased taxes paid on the increased income will in fact pay for the project long before the official payments are complete. Sales in electricity in one year alone amounted to almost $3 million.

Indirect benefits from the project are visible everywhere one travels in this area. There are increasing new businesses, new capital improvements, and an increase in valuations serving as tax base; increased tax revenues from northeastern Colorado have aided every citizen in the United States. Other benefits which must not be overlooked are the recreation values to local residents and tourists; boating, fishing, camping, and picnicking are the best to be found anywhere in this world.

The apparent cost of providing these benefits to the people of northeastern Colorado and the nation is $161,203,669. The actual unrecoverable cost to the American taxpayers and the Nation is absolutely nothing (just as the Fryingpan-Arkansas project will be nothing) because by the year 2009 the entire cost of the project will have been paid through irrigation and electric use.

Moreover, tunnels and power stations will remain for centuries of use. These assets have a life far beyond the 50 years required for repayment under the contract.

I would like to include a statement by Mr. J. R. Barkley, the secretary-manager of the Northern Colorado Conservancy District, on such projects. This district is the contracting entity for the irrigation features of the Big Thompson project. Mr. Barkley states:

> We are fortunate to have a completed project and fully operating district. We know what it has done, what it can do, and recognize its value to the water users of our section of the eastern slope. This knowledge gives rise to the hope that our neighboring Arkansas River Valley may be fortunate enough to acquire its long-sought Fryingpan-Arkansas project * * * we know that the needs of the Arkansas Valley are acute and the development of that project will mean much to the economics of the Arkansas Valley as well as the State of Colorado as a whole.

Again, let me urge passage of the Fryingpan-Arkansas project. The multiple-use reclamation concept has proved an outstanding success throughout the Nation and in northeastern Colorado. Let us stop time and water. Let us build the Fryingpan-Arkansas project.

Supplementing the statement I have already given, it has been my good fortune every year since 1948 to take groups of young people on a tour of the Colorado-Big Thompson project, and I think I have seen that in almost every stage of construction since the completion of the Alva B. Adams Tunnel.

This imaginative project combines so many delightful features from the storage reservoirs which provide additional lakes in the Fourth Congressional District, the district the chairman represents; to the additional lakes and reservoirs in my own district, Estes Lake and Horse Creek Reservoir for example. The project provides 365 days a year, 24 hours a day, firm and supplemental power, even though it is merely moving water gained in the periods of high waterflow from one reservoir to another, to be available for the brief periods during which irrigation waters are especially needed. This delightful combination has proved to be a triumph of man's engineering skill and imagination over the timing which nature otherwise would provide for water moving off the mountains down to the streams.

We in the Second District have known at firsthand the tremendous contributions that such a project can make. I do not think there is any resident of northeastern Colorado familiar with the Big Thompson project that would not be happy to see the Congress authorize the Fryingpan-Arkansas project for the benefit of southeastern Colorado and for the benefit of the Nation.

One of our problems, as this committee knows even better than I, is to explain to people that these projects will more than pay for themselves; that we are not asking for any handout from the Federal Treasury: we are asking for the temporary loan of the public credit and we will repay it manyfold. We will repay it directly through the payments for the use of water and for the use of the electricity that the project generates.

But, more than that, we will pay for the project many times over in the increases in income which the project provides; and the higher taxes on that income are an indirect benefit to the Federal Treasury far beyond the direct repayment of the amount loaned for the construction of the project.

More than that, the project plans call for repayment in full within 50 years, and yet many of the facilities which are provided—the reservoirs, the tunnels, and many of the structures—will last perhaps for centuries. There is no special reason to think they may not last for the millenium, as some of the early Roman projects have lasted. Therefore, the public will continue to own an asset even thought it has been paid for in full long beyond the time originally called for in the repayment schedule.

By contrast with this, the Federal Government spends money every year on a whole host of water projects for the benefit of other citizens throughout the land which have no provision for any repayment whatsoever. This is not to say that these projects may not also benefit the community through increases in income and through protection against the losses of floods and so forth. But I submit that we who represent reclamation areas have a right to have our requests considered in the economic terms that they afford.

As one who has taught land economics and public utility economics, I am firmly convinced that this project and others like it are the finest kind of investment in the future of our Nation. I trust that if not this Congress, then certainly the next one will make use of the work that has gone into the development and advancement of this project to the present point at an early time in the 87th Congress in order that work may proceed.

There is no question, as witnesses to follow me will develop, that this project will be of tremendous boon not only to the State of Colorado but to the entire Nation.

I thank the chairman for his indulgence.

Mr. ASPINALL. Thank you very much, Mr. Johnson. I think you understand, Mr. Johnson, if my memory serves me correctly, that the wonderful Colorado-Big Thompson project was not authorized in the beginning as a reclamation project: it was authorized and started as a public works project under the National Recovery Administration during the difficult times of the thirties. And projects such as this project or San Juan-Chama and other projects coming before us at this time must have a little bit more study and consideration and, I would say, a little bit more legwork on the part of the House Members than that great project of the northeastern part of Colorado.

Mr. JOHNSON. Of all of the WPA projects this Government started, I can think of none that is a great tribute to insight and imagination and none that will make a longer and more lasting contribution to the economy of the Nation.

Mr. ASPINALL. I think that is right. But if you had sat on this committee, like I have for the last 12 years, and heard some of your colleagues talk and complain and criticize because this project started out as a $45 million project and ended up close to a $175 million project, you would have been impressed by some of the difficulties that face today large reclamation projects of the West.

Mr. JOHNSON. I am well aware of the complications that the gentleman refers to. I think it should be noted in passing that estimates made in the 1930's must necessarily be revised, if only by inflationary forces that were at work following the outbreak of hostilities in 1939.

Mr. ASPINALL. I do not think even your economics would permit such a spread as that.

Mr. JOHNSON. More than that, I believe the project grew in scope in the interim, and finally I would say to my distinguished colleague and chairman of this committee that the investment which this expenditure of funds provides was very well spent.

As I say, I inspected the work at almost every stage of the proceedings from 1947 on. I was impressed, for example, by the work on tunnels. The same man drilled several of those tunnels. In the cost on each succeeding bid on the tunnel work, he had developed improved techniques for more rapid forming and for more rapid lining, for example, of the concrete. The result is that the cost per unit of work in place, I believe, fell for certain of the units with each succeeding development. The projects therefore were, so far as I was able to observe, constructed with a minimum waste motion and with very interesting economies.

I would note, Mr. Chairman, that we have the equivalent of at least three Hoover Dams in the electrical side of the Big Thompson project, and yet these call for nothing more than small storage reservoirs, surge tanks, and pipelines on a steep hillside. We get the benefit of a head of water which exceeds, I believe, the head of water at Hoover Dam just at Estes Park by having three pipes coming down the hillside.

We have the equivalent of Hoover Dam on top of the Hoover Dam at the Rattlesnake-Horsetooth area of the Big Thompson project. So, I would note that per head of power at the powerplant, the investment was a very modest one, indeed, when you consider what was accomplished with the outlay of funds involved.

Mr. ASPINALL. I am sure it will pay out and I am sure it is a good project. I think if you had been in the position of responsibility that the chairman of the full committee has been in the last several years, you could have seen and known some of the unresolved questions that came up and have come up and are continually coming up because of a lack of study and a lack of investigation on this project. You would realize a little bit more than perhaps you do when I say it is necessary to give to the legislation which authorizes these projects more study than we have heretofore.

Mr. JOHNSON. I trust the future consideration by this committee of the Fryingpan-Arkansas bill will perfect the measure so that when it does reach the floor of the Congress the questions which need to be answered can be answered to the satisfaction of all the Members and that this project can, in fact, be authorized, and will, in fact, be built in the very near future.

Mr. ASPINALL. Thank you very much.

Mr. JOHNSON. I thank the chairman.

Mr. ASPINALL. I have a statement here from the Honorable Gordon Allott, senior Senator from the State of Colorado, in support of the legislation, and unless there is an objection, his statement will be printed in the record at this point.

Hearing no objection, it is so ordered.

(The statement referred to follows:)

STATEMENT OF HON. GORDON ALLOTT

It will not take me long to explain to this distinguished committee my views on the Fryingpan-Arkansas project.

The project is well conceived to assist a large area in the reclamation West within the objectives of the Reclamation Act.

The project is soundly engineered and economically feasible—as much so as any of the hundreds of projects approved by Congress since this one was first recommended to the Congress—and more so than many we have approved.

The project now has very real benefits to the people on both sides of the Rocky Mountain Divide, and for the first time has the complete, official support of all areas in Colorado.

Except for the change in location of the west slope stream regulating reservoir from Aspen to Reudi, this project has been four times approved by the President, twice approved by the Senate, and twice approved by this committee. The Congress has approved well in excess of 4 billion dollars' worth of water construction programs since this project was first presented to Congress 7 years ago this Thursday.

In the interest of fairness and on behalf of the people of Colorado, I implore the members of this committee to report the Fryingpan-Arkansas project as expeditiously as possible.

Mr. ASPINALL. Before we start the consideration, and hear the witnesses, the Chair thinks he should take care of two matters.

The first is to state that the history of the Congress during the last 12 years has been that we have had on an average of somewhere around $240 or $250 million appropriated annually for the reclamation program, one year going a little bit above $300 million, another year, the lowest year, going a little below $160 million, but somewhere around an average of $225 to $250 million.

The chairman of the full committee, at the instance of his colleagues on the committee, has appeared annually now for several years before the Appropriations Committee asking for an orderly program of somewhere around $300 million each year for construction of reclamation projects. To date we have not been successful in arriving at that goal. But if we did arrive at that goal, that would mean that we should have an orderly authorization program of somewhere around $250 or $300 million, because without the authorization preceding the appropriation, the program of course, would not be possible.

Now in the present Congress we have approached the $500 million authorization goal for the 2 years providing the San Luis project, which was recently approved by the Congress and by the President, carries with it the authorization for $190 million for construction funds for drainage facilities and it is finally decided to have Federal construciton of these facilities.

In other words, we have approximated during this Congress the $500 million authorization goal. The chairman of the committee, if permitted to be back here next year, has the same goal in mind for the next Congress, and he is sure his colleagues wish to go along with him and realize that goal. That will mean that next year we will have such projects as Midstate, Fryingpan-Arkansas project, San Juan-Chama, Cheney, Savory-Pothood, and perhaps some other smaller projects throughout the reclamation West which will also approximate that goal.

Rather than risk the welfare of the good projects in the consideration of this legislation during the last days of Congress, the chairman thinks it is only practical, it is only commonsense, to go along and build up the record but not press before Congress for authorizations during this particular Congress.

The Chair may say to his friends and fellow workers from Colorado, primarily, that most of the committee are in agreement with the chairman in his position.

Mr. Chenoweth, do you wish the record to show that certain individuals are here before we start out?

Mr. CHENOWETH. Yes, Mr. Chairman.

Mr. ASPINALL. Will you name the individuals?

Mr. CHENOWETH. I am happy to introduce them.

We are certainly pleased to have this large group here today from Colorado in support of the Fryingpan-Arkansas project. Some of them have been here before and some are here for the first time. I would like to start with Mr. J. Selby Young of Colorado Springs, who is the president of the Southeastern Colorado Water Conservancy District.

Mr. Charles Boustead of Pueblo, who is executive secretary of the district. Will you please stand up and remain standing?

Mr. Frank S. Hoag, Jr., publisher of the Pueblo Star-Journal and Chieftain, who is one of the original sponsors of the project.

Mr. J. S. Nichols of Colorado Springs, who is superintendent of the water division of the public utilities department of the city and also a member of the board.

Mr. Charles J. Beise of Denver, who has been the attorney for, first, the Southeastern Colorado Water Development Association, the group that promoted this project, and now the Southeastern Colorado Water Conservancy District.

Mr. William A. Bauserman of Manzanola, who is on the board of directors, and Mr. Frank Dilley of Canon City, also a member of the board.

Roy Cooper of Las Animas, a member of the board of directors.

I believe that concludes the list of those from the Arkansas Valley.

Mr. ASPINALL. Will you introduce those from western Colorado?

Mr. CHENOWETH. We are indeed delighted to have with us today three witnesses from the western slope of Colorado.

As I mentioned, this is the first time we have been able to present a united front on this project. I wish to present Mr. Allen Brown of Delta, an old personal friend of long standing, president of the Colorado River Water Conservation District.

Mr. John Barnard of Granby, who is attorney for the district, a former resident of Pueblo, and Mr. Phil Smith of Glenwood Springs, the secretary of the district.

Mr. Felix Sparks of Denver, executive director of the Colorado Water Conservation Board. I want to say to Mr. Sparks in the presence of the committee and this group from Colorado that he deserves great credit for bringing about an agreement on this project between the two groups, and everyone who is interested in the Fryingpan-Arkansas project is indeed grateful to Mr. Sparks for his splendid work.

I believe that is all, Mr. Chairman, and I personally appreciate the opportunity to welcome this outstanding group of witnesses.

Mr. ASPINALL. Thank you very much.

The next witnesses then will be representatives of the Department of the Interior, Hon. Fred G. Aandahl, Assistant Secretary of the Interior, accompanied by Mr. William I. Palmer, Assistant Commis-

sioner of Reclamation, Mr. N. B. Bennett, Jr., Assistant Commissioner of Reclamation, Mr. James L. Ogilvie, Assistant Regional Director, with headquarters in Denver, and Mr. Don Burnett, head of the project development section of the Bureau.

Mr. Aandahl, will you and your group come to the witness table? I understand you want to make a short statement and then you want to turn it over to Mr. Palmer and then we wish to question the delegation en bloc. Is that correct?

STATEMENT OF FRED G. AANDAHL, ASSISTANT SECRETARY OF THE DEPARTMENT OF THE INTERIOR; ACCOMPANIED BY WILLIAM I. PALMER, ASSISTANT COMMISSIONER OF RECLAMATION; N. B. BENNETT, JR., ASSISTANT COMMISSIONER OF RECLAMATION; JAMES L. OGILVIE, ASSISTANT REGIONAL DIRECTOR, DENVER; AND DON BURNETT, PROJECT DEVELOPMENT SECTION, BUREAU OF RECLAMATION

Mr. AANDAHL. We of Interior are again pleased to appear before your committee on the Fryingpan-Arkansas project.

The legislation now before you for consideration represents the culmination of years of study, negotiation, and compromise to arrive at a final plan for water and power service to the Arkansas River Valley in Colorado.

As outlined in the departmental legislative report, of March 25, 1960, to the chairman and in our report of March 4, 1960, on Ruedi Dam and Reservoir, the project is economically justified and financially feasible. We recommend enactment of the legislation with the amendment suggestions noted in our above letter, and construction of the project by the Bureau of Reclamation for the mutual benefit of water contribution to national productivity and welfare.

The primary purpose of the Fryingpan-Arkansas project is to deliver the agricultural economy of the Arkansas Valley from the progressive decline caused by the inadequacy of the present water supply to sustain both the existing irrigation and the rocketing municipal and industrial water use.

By importing from the Colorado River Basin waters which are available there, and by making most effective use of Arkansas River waters, the trend of recent years can be reversed, existing extreme shortages of irrigation water can be reduced to tolerable limits, and the municipal and industrial water requirements of the valley can be met for many years to come.

Collaterally, hydroelectric energy can be generated, the safety of the lives, homes, and farms of the residents of the valley can be insured against floods, water for the development of the strategically important oil shale industry and for other uses in western Colorado will be provided, and opportunities for development of recreation and enhancement of fish and wildlife in high mountain reservoirs and streams will be created.

Earlier disagreement between water interests on the east and west slopes of the Continental Divide have now been resolved and the plan proposed is endorsed by the entire State of Colorodo. More than $153,500,000 of this $170 million project is reimbursable to the Federal Government in accordance with reclamation law, with the power and

municipal water users repaying the costs allocated to those uses with interest.

Using a 2½-percent rate, for example, interest payments to the Treasury over the repayment period would total about $60 million. After payout, the benefits of the project will continue indefinitely. Extensive secondary returns to the national economy and to the Treasury throughout the construction period and operating life of the project further enhance the desirability of the Fryingpan-Arkansas project as a Federal Government investment.

The President and many Congressmen and other Federal officials have recognized the desirability of this project, and have worked for its authorization. Arkansas Valley interests and the affected cities have formed the Southeastern Colorado Conservancy District to sponsor this project. The State of Colorado has been constant in its support and has done everything in its power to cooperate in the investigations and to encourage authorization. As now proposed, the project and the authorizating legislation include features and modifiications which add to the value and acceptability of this worthwhile project.

Thank you Mr. Chairman. The statement that Mr. Palmer has is made to dovetail into and follow what I have just said.

Mr. ASPINALL. I think it would be well for you to state the latest endorsement of the project. It should be in the record. In his latest message to the Congress, the President specifically endorsed two projects.

Mr. AANDAHL. That is correct.

Mr. ASPINALL. One was San Luis which has already received official approval and the other was the Fryingpan-Arkansas project.

Mr. AANDAHL. That is right.

Mr. ASPINALL. All right, Mr. Palmer.

Mr. PALMER. Mr. Chairman, you and the other members of this committee are familiar with the physical plan and general purposes of the Fryingpan-Arkansas project. You have heard the presentations and recommendations of witnesses from the Department of the Interior, State of Colorado, and local interests on several previous occasions.

You also have before you the departmental report on the proposed bill to which is attached a reevaluation statement bringing the physical and economic data on the project up to date. We will not, therefore, burden the record with repetitive details of the project plan. Should any member of the committee have further questions on this project, representatives of the Department are here to supply information.

One basic change in the project plan has been made since we last appeared before this committee. You will recall that the plan included a reservoir on the Roaring Fork River just above the town of Aspen, Colo., and that there was considerable opposition expressed to this feature.

Mr. Chairman, at this point it might be helpful if Mr. Ogilvie would step to the map and identify the location of Ruedi Dam and Reservoir with respect to Aspen Dam and the other major project features so the committee would be completely oriented.

Mr. OGILVIE. I would be happy to do that. Ruedi Dam and Reservoir is located on the Fryingpan River at this point in the vicinity

of Ruedi. Ruedi takes the place of the former Aspen Dam and Reservoir which was proposed immediately above the small mountain village of Aspen, Colo.

The west slope collection system is essentially the same as proposed heretofore in the project plan and involves headwaters of the Fryingpan River and also over as far as Hunter Creek on the Roaring Fork River. Those collection canals and conduits lead to the major Fryingpan-Arkansas project tunnel which pierces the Continental Divide and discharges water into the first east slope reservoir, Sugar Loaf Reservoir.

From there on down the east slope we have a series of power canals, powerplants, and an additional regulating and storage reservoir at Twin Lakes. This is the backbone power system of the Fryingpan-Arkansas project. There are six powerplants in that stretch of system. The water is discharged from the last powerplant at Salida into the Arkansas River, where it then follows the Arkansas River down past Canon City and to the major east slope storage facility known as Pueblo Reservoir.

At Pueblo Reservoir, there is the seventh powerplant in the system. As the water comes down the river, the diversion of municipal water to Colorado Springs takes place in the vicinity of Canon City and a conduit extends across to Colorado Springs. The discharges from Pueblo Reservoir for the irrigation of the lands in the Arkansas Valley are made directly to the Arkansas River. That is a significant point inasmuch as a major distribution system is not necessary in this scheme. The existing irrigation works will then pick up the water which is released from Pueblo Reservoir and divert such water along with Arkansas River waters into their systems, to supply the irrigation areas in the districts.

The municipal water that comes out of Pueblo Reservoir will be furnished to Pueblo and the other Arkansas River Valley towns by means of a pipeline extending down the Arkansas Valley.

Mr. PALMER. The purpose of this storage at the Aspen site was to furnish replacement water in the Colorado River Basin, thereby making diversions to the Arkansas River possible. The same function can be served with a reservoir at the Ruedi site on the Fryingpan River, and this reservoir can serve the further purposes of municipal and industrial water supply, flood control, fish and wildlife, recreation, and additional irrigation water supply in the Colorado River Basin.

Only that portion of the cost of Ruedi Dam and Reservoir equal to the construction cost, $7,600,000, of Aspen Dam and Reservoir, for west slope replacement storage, has been charged against the Fryingpan-Arkansas project for repayment. The remaining cost of $5,231,000 has been allocated to west slope benefits, as follows. municipal and industrial water, $3,300,700; fish and wildlife, $1,757,800; flood control, $117,500; and recreation, $55,000.

The active storage capacity provided in Ruedi Reservoir not only serves as replacement storage but also provides significant storage for future development of the west slope oil shale industry, for municipal and industrial expansion, or for further irrigation development. Our planning report describing the plan for Ruedi Dam and Reservoir was sent to the Congress on March 4, 1960. It has been referred to your committee and ordered printed as House Document No. 353, 86th Congress.

The Fryingpan-Arkansas project was first proposed to the Congress in 1953. Except for the above-noted Ruedi Reservoir, we have explained changes of plan and fluctuations of cost estimates since that time. The estimated cost of the project based on October 1958 prices is $169,905,000, including Ruedi Reservoir. Some further modifications have been made in project feature designs based on more complete field data and operation studies.

Some tunnels were substituted for open canals in the western slope water collection system; siphons and tunnels were added along the eastern slope power canals to handle cross drainage, and additional check structures and increased forebay and afterbay facilities were included in power canals to attain more flexible year around operations and maximum production of firm power. The cost of this additional work is included in the cost estimate above. Numerous minor modifications in location and design of other features have resulted in an improved project at a substantial savings in cost.

As previously indicated, storage regulation provided by Ruedi Reservoir on the Fryingpan River will assure water for the oil shale industry, which is extremely important to the military defense and civilian economy of the Nation. Although the requirement for water for oil shale refining does not yet require river regulation, it is the consensus of many authorities that such a requirement will occur in a comparatively few years, and that the water can then be sold.

We recommend deferred repayment of costs of Ruedi Dam and Reservoir which are allocated to future municipal and industrial water supply in accordance with provisions of the Water Supply Act of 1958 (title III, Public Law 500–85). As indicated in our report, the State of Colorado has given assurance of the State's intention to underwrite that portion of the cost if the anticipated market should not develop.

In line with this, the departmental report recommended that the legislation be amended to require affirmative legislation by the State of Colorado on this point prior to commencement of construction. However, we note that should an appropriate repayment entity be organized under existing Colorado law to contract with the United States prior to construction for the appropriate amount, this would eliminate the necessity for special Colorado legislation.

As a result of the inclusion of Ruedi Dam and Reservoir as a feature of the Fryingpan-Arkansas project, and the desire of local and State interests to achieve mutual understanding, the operating principles, prepared under auspices of the State of Colorado, which were set forth in the original report (H. Doc. No. 187, 83d Cong.) have been revised and are quoted in our report on Ruedi Dam. We accept the amended principles as a basis for project operation.

Severe drought conditions have been experienced in the Arkansas Valley since we last appeared before this committee. In 1958, the irrigators experienced an average headgate shortage of 22 percent—in 1959 headgate requirements of over 900,000 acre-feet could be met by only 481,000 acre-feet of available river runoff—a drastic shortage during the irrigation season of 48 percent.

Several irrigation systems, with depleted holdover storage, were without any water during the late growing season. The need for the Fryingpan-Arkansas project is dramatically demonstrated by these recent experiences.

The Southeastern Colorado Conservancy District has been created through court action on April 30, 1958. The new district contains 280,600 irrigable acres to benefit from supplemental and regulated waters of the project. The conservancy district is anxious to negotiate a repayment contract with the United States consistent with its obligations.

Revenues available for repayment will result from an ad valorem tax within the conservancy district, the sale of water for irrigation, sale of municipal and industrial water, and electric generation. The study in the evaluation statement shows that based on a 2.5 percent interest rate and charging 6.5 mills for power, all reimbursable costs will be repaid within 51 years after completion of construction. We are confident this energy can be marketed to preference customers and others at rates compatible with other rates in the area and sufficiently high to maintain the financial integrity of the project.

The Bureau of the Budget, in commenting on the pending bills by letter of March 26, 1960, recommended a substitute for the interest rate formula specified in those bills.

The substitute language would base the interest calculation on the average yield to maturity of securities marketed over the preceding 3 years rather than the average rate payable by the Treasury as prescribed in the Water Supply Act of 1958. This is similar to language in the Colorado River Storage Project Act, which has resulted in a wide fluctuation in interest rates year by year. The language permitting the use of a 3-year average will somewhat dampen the rate fluctuations, but the language in the bills—H.R. 9229, H.R. 9230, and H.R. 9232—is consistent with the interest formula of the Water Supply Act of 1958 and with the action recently taken by the Congress on the Norman project.

I would like to depart from the statement to point out the paragraph which indicates that for the deferred portion of the capacity of the Ruedi Dam and Reservoir the interest formula in the Water Supply Act of 1958 would apply.

Mr. ASPINALL. I would like for you to answer this question right at this place. Is it not true that the Bureau of the Budget in reporting on the Norman project, the original legislation, asked that language be stricken and the Water Supply Act formula be placed in the Norman project?

Mr. PALMER. Yes, sir, Mr. Chairman, that is correct.

The Bureau of the Budget also suggested that section 2(a) of the legislation be amended to provide for a repayment period of 50 years. We have studied the project assuming a 3.5 percent interest rate and using a 50-year repayment period. In order to return all reimbursable costs in this period, an average rate of 7.5 mills would be required for power. Such a power rate is certainly the outside limit under which power could be marketed. We have no projects today paying that high a rate of interest.

The Fryingpan-Arkansas project is both feasible and economically justified. The benefit-cost ratio for the project, based on total benefits, is 1.59 to 1 over a 100-year period of analysis, indicating that those benefits of the project which are readily evaluated in monetary terms exceed the project costs in that proportion.

The benefit-cost ratio for a 50-year period of analysis is 1.35 to 1 for total benefits and 1.08 to 1 on direct benefits alone. The in-

tangible benefits associated with this large multipurpose project, which are not measured in this analysis, are of great importance to the area, State, and Nation.

The creation and continued existence of the Southeastern Colorado Conservancy District and its constant and aggressive sponsorship of the Fryingpan-Arkansas project gives ample evidence of the local need and desire for the project and of the readiness of the people to assume their responsibilities under the plan.

The Fryingpan-Arkansas project is feasible from an engineering standpoint and is a highly productive development as demonstrated by benefit-cost analysis. About 90 percent of the total project costs is reimbursable and over one-half of the repayable cost bears interest. Amortization of these costs is accomplished within the limitations incorporated in the proposed authorizing legislation. The project has been officially approved by the State of Colorado and its authorization has been endorsed by the President of the United States.

In every way, this project is worthy of authorization and construction as a Federal reclamation project. We recommend that this committee act favorably on the bills now being considered.

Thank you, Mr. Chairman.

Mr. ASPINALL. Thank you very much.

The Chair recognizes his colleague from California, the sponsor of the recently favorably reported San Luis project.

Mr. SISK. Thank you, Mr. Chairman.

I do not have too many questions at the present time. I am happy to have you gentlemen back before us. I have been fortunate in having the opportunity to sit on a number of hearings regarding this prospect.

I believe it is clear, as I understand, that the proposal now pending is for all purposes identical to proposals heretofore for this development, except for the change of Ruedi Dam and Reservoir in place of the Aspen Dam. Is that generally correct?

Mr. PALMER. Yes, sir. That is correct.

Mr. SISK. On the Ruedi Dam and Reservoir, as I understand, the total cost of that reservoir is going to be somewhere in the neighborhood of $13 million; is that correct?

Mr. PALMER. Yes, sir, Mr. Sisk; that is correct.

Mr. SISK. But, actually, what you are going to charge to this particular project is only that portion of the cost which would have been required to construct Aspen and the balance which would be some $5½ million, then, is going to be—is that payment to be held in a state of suspension, pending need; or is that to be charged to the western slope development under the upper Colorado River development program? I do not quite understand how those charges are to be handled.

Mr. ASPINALL. Will the gentleman yield?

Mr. SISK. Yes.

Mr. ASPINALL. My colleague, of course, has put his finger on one of the most fundamental parts of the legislation and one which will have to be decided upon before we can go on the floor of the House. It is the wish of the sponsor of this particular bill that this be tied to the revenues of the upper Colorado River program so that all reimbursable allocations would be paid within the 50 years after the completion of the Ruedi Reservoir by some means or other out of Colo-

rado's share of those funds. The bill, as now before us, has been tied to the Water Supply Act.

The reason for the disturbed minds we have at the present time in western Colorado, although they have given their approval of the way that the legislation is written at the present time, is the way that the case has been made up which would seem to deny any irrigation use out of the Ruedi Reservoir and most certainly that is not the desire of western Colorado.

Western Colorado's use from the Ruedi Reservoir may be as irrigation rather than so much for municipal use, but the way the report is written, the gentleman has certainly put his finger on a very vital part of the legislation and project proposal.

Mr. SISK. I appreciate very much the statement of my chairman on this. I have been very sympathetic and have supported this project heretofore and, frankly, expect to support the project again.

The only question I want to try to get clear in my mind is exactly what was involved here. As I understand, your language at the bottom of page 3, in this paragraph, Mr. Palmer, where you recommend this deferred payment here, you say in the second sentence:

> As indicated in our report, the State of Colorado has given assurance of the State's intention to underwrite that portion of the cost if the anticipated market does not develop.

I assume that goes to the point my chairman has commented on. Is that correct?

Mr. PALMER. That is correct. Mr. Sisk, to coordinate those two points, if you will go back to my statement, the suggested allocation of municipal-industrial water of $3,300,700 is the figure in question. In other words, the allocation to municipal-industrial use that would be deferred under Public Law 85–500 is that $3,300,700.

Mr. SISK. I see. That is the municipal-industrial water.

Mr. PALMER. Yes. If the municipal-industrial water market did not develop, as the chairman indicated, there is use for the water for irrigation and this is one of the points of interest on the part of the western slope people.

Mr. SISK. With reference to, of course, some of the past discussion, just for the purpose of refreshing my memory and for the record, what again is the total amount of water that is actually diverted in the transmountain diversion from the west slope to the east slope? What is the total acre-feet?

Mr. PALMER. Mr. Ogilvie will answer that.

Mr. OGILVIE. Congressman Sisk, the total diversion from the west slope to the east slope of Fryingpan-Arkansas water amounts to an average annual 69,100 acre-feet.

Mr. SISK. That is exactly the same figure, or approximately the same figure that has been used throughout the years in the discussion of this project.

Mr. PALMER. Yes, sir. The previous figure that we have presented to this committee is 69,200 acre-feet. The studies have been extended over an additional period of years, resulting in that very minor modification.

Mr. SISK. And this change, of course, from Aspen Dam to Ruedi Dam would in no way affect the transmountain diversion, the total amount to be diverted.

Mr. PALMER. No, sir, it would not.

Mr. ASPINALL. Would the gentleman yield?

Mr. SISK. Yes.

Mr. ASPINALL. That 69,100 acre-feet, is it inclusive or exclusive of the present diversion through the present tunnel of the Twin Lakes group?

Mr. PALMER. It is exclusive of that amount, Mr. Chairman.

Mr. ASPINALL. With that amount included what is the amount of transfer?

Mr. PALMER. The additional diversion by the Twin Lakes would amount to approximately 15,000 acre-feet for a total of 84,000 acre-feet, including 69,100 of Fryingpan water.

Mr. SISK. I have one other question at this time.

I believe you estimate the total cost at 1958 prices to be $169,905,000, including, of course, Ruedi Reservoir. How do those figures compare in total with the costs which were used upon the occasion of our last hearing, I believe in the 85th Congress? Has there been substantial increase on that or not? It seems to me, at that time, it was $138 million.

Mr. OGILVIE. At that time, the total estimated cost of project was $159,287,000.

Mr. SISK. Actually, what is involved here is simply inflated construction costs; is that right, plus the additional cost of Ruedi.

Mr. OGILVIE. One of the significant items, of course, is the increased cost of Ruedi as compared to Aspen Reservoir. Other items which affected that cost, the major items, involved the construction of the power facilities. There was some increase in cost on those power facilities.

Mr. SISK. Actually, for my education, I am curious as to what amount of inflated costs may have developed. As I understand, when you take into account the additional cost of Ruedi as against Aspen, the additional power features you have mentioned, there has actually been little inflation in construction cost, very little change; is that right, in the indices.

Mr. OGILVIE. That is correct. There is very little change. In fact, on some facilities, there has been a slight decrease.

Mr. SISK. That is very interesting. I know, of course, for the past 10 or 15 years, costs have gone up and up and up. I was curious to see to what extent they had stabilized during the past few years. I understand from these figures they indicate some stabilization.

That is all at the present time.

Mr. ASPINALL. The gentleman from South Dakota?

Mr. BERRY. No questions.

Mr. ASPINALL. Do you yield to our collegue from Colorado, Mr. Chenoweth?

Mr. BERRY. I yield.

Mr. CHENOWETH. I will not take the time for very many questions as I want my colleagues to have more of the time. I want to congratulate the Bureau witnesses, Mr. Aandahl and Mr. Palmer, on their splendid statements. I feel this is the best project we have submitted to this committee, with the substitution of the Ruedi Reservoir for the Aspen Reservoir. Is that your feeling, Mr. Aandahl?

Mr. AANDAHL. That is correct.

Mr. CHENOWETH. We have a better project, one which provides greater benefits to the west slope. It is a better project than the previous project you presented.

Mr. AANDAHL. Yes, and it does a great deal to bring the interests of the west slope and the east slope together.

Mr. CHENOWETH. I wanted to ask Mr. Palmer about the interest rate. Is it not becoming more and more settled that Congress is applying the interest rate formula in the Water Supply Act and adopting that formula in prcjects we are authorizing now?

Mr. PALMER. The departmental report on the bill now being considered recommended the Water Supply Act language. The bill heard just last week on the Cheney Division of the Wichita project contained the Water Supply Act language, and the bill passed by the Congress on the Norman project contained the Water Supply Act language.

Mr. CHENOWETH. You make reference to the fact that the upper Colorado River project has a different formula.

Mr. PALMER. That is correct.

Mr. CHENOWETH. It is not true that Congress has now changed that formula and adopted the Water Supply Act formula for the upper Colorado projects which await construction?

Mr. PALMER. That is correct. If the President signs the Norman project bill that would be the rule for the Colorado storage project for facilities started after June 1, 1960.

Mr. CHENOWETH. I hope there will be no delay in signing this bill because it is very important to us in Colorado.

Has the Bureau any objection to accepting the Water Supply Act formula in this project? The President and the Bureau of the Budget have not always seen eye to eye with us. What is the attitude of the Bureau on this issue?

Mr. AANDAHL. Mr. Congressman, may I call your attention to the language of the Under Secretary's letter to the chairman of the committee, dated March 25, 1960.

Mr. CHENOWETH. Go right ahead.

Mr. AANDAHL. The first part of the paragraph on page 4 calls attention to the provision of the bills that are before the committee and then concludes with this statement:

> Since the provision in the Water Supply Act is the most recent expression of the Congress in legislation of general application and since it is expected there will be some contracts for project water under the authority of that act, we would prefer the provision contained in H.R. 9229, H.R. 9230 and H.R. 9232 to that which appears in H.R. 9231, and we recommend that if your committee should act favorably on H.R. 9231, it be amended to adopt the provisions of section 2(c) appearing in one of the other two bills.

We are specifically recommending the interest formula of the Water Supply Act.

You have that over the signature of the Under Secretary, dated March 25. That represents the Department and the Bureau of Reclamation opinion.

Mr. CHENOWETH. That is your thinking today, then.

Mr. AANDAHL. Correct.

Mr. ASPINALL. Will the gentleman yield?

Mr. CHENOWETH. Yes.

Mr. ASPINALL. Of course, H.R. 9231 was supposed to be in conformity with the others. At first, we had the formula of the Colo-

rado River Project Act in mind and then we changed it. That is the reason why Mr. Rogers was not aware of the fact when he tossed into the hopper the bill without the change.

As I understood the position of the Department when we were considering some legislation last week, they would rather have, because of administrative difficulties, the language which was suggested for the Norman project in the beginning. Do I understand then that the Department and the Bureau of Reclamation are presently willing to take the Water Supply Act formula even though it is a little bit more difficult of administration?

Mr. AANDAHL. That is correct. It has substantially the same effect as far as the relationship of the Government and the water users are concerned.

Mr. ASPINALL. Thank you, Mr. Chenoweth.

Mr. CHENOWETH. Mr. Ogilvie, you have been doing a great deal of work on this project and we appreciate the contributions you have made. There have been no substantial changes in the specifications of the project since the original project was presented to the House, with the one exception of the substitution of the Ruedi Reservoir for the Aspen Reservoir; is that correct?

Mr. OGILVIE. That is correct.

Mr. ASPINALL. Will the gentleman yield?

Mr. CHENOWETH. Yes.

Mr. ASPINALL. There also was a change, was there not, relative to the water supply system to the city of Pueblo?

Mr. OGILVIE. Yes, sir; there was a modification with respect to that supply system. The Pueblo people went ahead and built a water treatment plant and that no longer is necessary as part of the project.

Mr. ASPINALL. But it does show the people of Pueblo were willing to accept additional responsibility than that to which they first put their minds. Is that not right?

Mr. OGILVIE. That is correct, sir.

Mr. CHENOWETH. There has been a change so far as Colorado Springs is concerned. The city of Colorado Springs has a new plan for taking the water they expect to receive under this project.

Mr. OGILVIE. There has been some minor modification in that plan in that the pipeline is now brought in at a lower elevation and that resulted in some economies as far as the cost of the project was concerned. It does not essentially change the amount of water that will be delivered to the city of Colorado Springs. But, through an interchange of Colorado Springs water, it affords them the same opportunity to enjoy the benefits from the project.

Mr. CHENOWETH. Who is to pay for that pipeline?

Mr. OGILVIE. The city of Colorado Springs will pay the cost of that pipeline.

Mr. CHENOWETH. They are going to pay the entire cost of the pipeline?

Mr. OGILVIE. Yes, sir.

Mr. ASPINALL. Will the gentleman yield?

Mr. CHENOWETH. Yes.

Mr. ASPINALL. Whatever pipelines are necessary to furnish the water to the municipal users down the Arkansas below Pueblo will also be paid by the municipalities; is that correct?

Mr. OGILVIE. That is correct.

Mr. CHENOWETH. I think the last time you were before the committee you mentioned some changes in the power facilities. Have there been any fundamental changes in the power plans, will you generate more power or less power with the same number of plants? What is the power picture?

Mr. OGILVIE. The project has the same number of powerplants as previously considered and the same generating capacity.

Mr. CHENOWETH. How much power are you going to generate?

Mr. OGILVIE. The total installed capacity for seven plants, is 123,900 kilowatts.

Mr. CHENOWETH. That is larger than the original amount?

Mr. OGILVIE. Slightly larger than the original amount, yes; but that change resulted from a nameplate change in generating capacity only there has been no change in the size or design of the generators or turbines, so the nameplate change does not actually result in more generation.

Mr. CHENOWETH. The chairman of the committee asked about the Twin Lakes diversion. That is now 69,100 acre-feet.

Mr. OGILVIE. That is correct.

Mr. CHENOWETH. Not 69,200?

Mr. OGILVIE. 69,100. That represents the average annual supply from the west slope based on our extended period of study which now covers the years 1911 through 1957. The former study covered the years 1911 through 1934.

Mr. CHENOWETH. 69,100 is the figure now that you are using?

Mr. OGILVIE. Yes, sir.

Mr. CHENOWETH. That is absolutely independent and exclusive of the present Twin Lakes diversion?

Mr. OGILVIE. That is correct.

Mr. CHENOWETH. What is the 15,000 acre-feet you mentioned in response to a question?

Mr. OGILVIE. The 15,000 acre-feet additional diversion from the west slope by Twin Lakes represents a potential which the Twin Lakes Co. has of diverting additional water from their collection field within the water rights which they presently enjoy.

Mr. CHENOWETH. What is the Twin Lakes Co. diverting now?

Mr. OGILVIE. They are diverting about 45,000 acre-feet.

Mr. CHENOWETH. What can they divert, what do they have the right to divert?

Mr. OGILVIE. I would like to correct that first statement. It is closer to 40,000 acre-feet and they can probably divert up in the neighborhood of 52,000 to 55,000 acre-feet.

Mr. CHENOWETH. If they have the capacity to store the water?

Mr. OGILVIE. Yes, sir.

Mr. CHENOWETH. And the development of the Fryingpan-Arkansas project would give them that capacity. Is that the reason you mentioned this 15,000 acre-feet?

Mr. OGILVIE. Yes, Sir; the development of the Fryingpan-Arkansas project will afford them the opportunity of additional storage space on the east slope which will enable them to divert and control that additional water.

Mr. CHENOWETH. They could go ahead and do that themselves if they wanted to?

Mr. OGILVIE. Yes, sir.

Mr. ASPINALL. Will the gentleman yield?

Mr. CHENOWETH. Yes.

Mr. ASPINALL. I want to be sure that we have the correct information concerning the maximum amount which they can divert under the legislation now before us. I understood you to say 15,000 acre-feet would be the maximum they would be able to divert as far as the Twin Lakes diversion is concerned. Is that correct?

Mr. OGILVIE. That is additional diversion, Mr. Chairman, 15,000 acre-feet additional diversion over and above what they are currently diverting.

Mr. ASPINALL. How much are they currently diverting?

Mr. OGILVIE. Between 40,000 and 42,000 acre-feet.

Mr. ASPINALL. What is the total amount that will be subject to diversion from western Colorado to eastern Colorado if this legislation is approved?

Mr. OGILVIE. It will be the 40,000 presently coming from Twin Lakes plus an additional 15,000 for Twin Lakes plus the 69,100 through the Fryingpan-Arkansas tunnel. That adds up to approximately 124,000 acre-feet.

Mr. ASPINALL. Thank you.

Mr. CHENOWETH. I want to make it clear there are two separate projects involved. The Twin Lakes Co. has had the right to take the amount of water you mentioned for some years?

Mr. OGILVIE. That is correct.

Mr. CHENOWETH. I think they are now diverting about 40,000.

Mr. OGILVIE. About 40,000, yes, sir.

Mr. CHENOWETH. That is the maximum they have ever diverted?

Mr. OGILVIE. That varies from year to year. They have fallen substantially below that in some years.

Mr. CHENOWETH. But that would be the maximum they could divert under their present facilities?

Mr. OGILVIE. It is probably about the average, Mr. Congressman.

Mr. CHENOWETH. In other words, there has been more water available, but they have not had the facilities to take care of it; is that correct?

Mr. OGILVIE. That is correct.

Mr. CHENOWETH. I believe that is all. I will reserve the balance of my time. Thank you.

Mr. ASPINALL. The gentleman from New Mexico?

Mr. MORRIS. I would like to ask about the price of the power 7.5 mills. Is that not a fairly high price?

Mr. PALMER. Mr. Morris, I believe I would like to have Assistant Commissioner Bennett respond to that.

Mr. BENNETT. The 7½ mills referred to in the statement is the result of a calculation utilizing 3½ percent interest and a strict 50-year period. It is as we indicated in the statement reaching the outside limits of the marketability of that power.

Mr. MORRIS. When you start justifying this data what do you do—do you make the interest rate fit the number of years or the power rate fit the number of years? Which do you use as your constant and which are you going to vary? Suppose you only got 5 cents for power. I believe we had a project in the other day that was

getting a half a cent for power and they wanted an extension for the payout period.

Mr. BENNETT. We can make the studies either way. The thing we were trying to test in this case was the interest rate. The 50-year period is generally followed throughout.

The reevaluation report contains a payout study based upon 2½ percent interest, which is approximately that under the Water Supply Act of 1958. That shows payout of power in 42 years after full service is provided and 53 years after the first water service is provided to the irrigation facilities.

Mr. ASPINALL. Will the gentleman yield?

Mr. MORRIS. I will yield to my chairman.

Mr. ASPINALL. And if you use 3½ percent as your interest formula what is the payout period?

Mr. BENNETT. On 3½ percent interest rate, keeping the years of payment relatively constant, power pays out in 42 years and the irrigation assistance in 50 years. But that requires the 7½-mill rate.

Mr. ASPINALL. If you use the upper Colorado River project formula what is the payout period?

Mr. BENNETT. If we use the new formula which is contained in the Norman——

Mr. ASPINALL. I am talking about the old formula.

Mr. BENNETT. Under the old formula—we do not have it here on 4⅛, we have the maximum of 3½, but obviously at 4⅛ percent the rate would have to be above 7½ mills holding the years constant.

Mr. ASPINALL. Or the payout period would have to be extended?

Mr. BENNETT. Or it would have to be extended.

Mr. ASPINALL. Considerably?

Mr. MORRIS. Mr. Palmer?

Mr. ASPINALL. Just a minute. I do not know whether he wants to give an answer to my word "considerably" or not. I said it would have to be extended considerably.

Mr. BENNETT. That is right. The rate is held constant, the years would have to be extended considerably.

Mr. ASPINALL. Thank you.

Mr. MORRIS. May I ask what is "considerably" in an estimate?

Mr. BENNETT. My recollection, Mr. Morris—and let me correct this in the record, if I quote you a wrong figure—is that with the 4⅛ percent interest we had to go to about 9⅑ or 9⅖ mills per kilowatt-hour to hold the 40-year and 50-year period.

Turning that around, holding the 7½ mill figure constant would probably make the power payout period go to somewhere in the neighborhood of 55 to 56 years and the irrigation payment somewhere around 65 to 68 years.

Mr. MORRIS. How many projects does the Bureau of Reclamation have at the present time where you are marketing power at 7.5 mills or above?

Mr. BENNETT. Excluding the Eklutna project in Alaska, I do not recall any at the moment, that the Bureau has at that high a rate. The western division of the Missouri River Basin project, based on a 50-percent load factor, averages 7.1 mills. Based on 60 percent load factor it averages 6.5 mills.

So we are now marketing the western division power somewhere between 6 and 7 mills, depending on the load factor of the particular customer.

Mr. MORRIS. That is your highest power rate at the present time?

Mr. BENNETT. Excluding Eklutna in Alaska, that is the highest one I know of, yes, sir.

Mr. MORRIS. In the Under Secretary's letter with regard to the interest rate, I believe the gentleman from Colorado, Mr. Chenoweth, asked the question, What was the Department's position with regard to this latest interest rate formula we incorporated in the Norman project bill? I noticed instead of answering the question you read the paragraph from the Under Secretary's letter dated March 25, 1960, which was before the legislation passed.

Mr. AANDAHL. I do not think it would be proper for me to comment at the moment on what the position will be with respect to the Norman project.

I have expressed an opinion with respect to the Wichita project we were considering last week and also with respect to this project.

Mr. MORRIS. What is your opinion with regard to this project?

Mr. AANDAHL. My opinion is as I read from the letter, and Interior's position has not changed since this report was sent over on March 26.

Mr. MORRIS. In other words, you agree with the Under Secretary's letter.

Mr. AANDAHL. Yes, without any question at all.

Mr. MORRIS. That the formula should be the one of the Water Supply Act of 1958?

Mr. AANDAHL. That is correct.

Mr. MORRIS. That is all, Mr. Chairman.

Mr. ASPINALL. The gentleman from Minnesota?

Mr. LANGEN. Thank you, Mr. Chairman.

May I inquire as to the relationship of the project to irrigation? Your statement seems to imply there are several systems that are involved or would benefit by the project in drought periods particularly. To what degree is that true?

Mr. PALMER. Mr. Ogilvie will supply the details, but I would like to call your attention to the fact that it is a fully developed area. There are many irrigation systems already installed and already taking water from the river. They are all in need in varying degrees of supplemental water development to round out their supply to permit the greater diversification of the cropping pattern and to assure more uniform cropping results.

Mr. ASPINALL. Will the gentleman yield?

Mr. LANGEN. Yes.

Mr. ASPINALL. In using the word "systems," he is talking about irrigation districts, he not talking about different systems of agricultural irrigation.

Mr. PALMER. Yes, sir. That is correct. Mr. Ogilvie, do you care to elaborate on this matter?

Mr. OGILVIE. There are a great number of private irrigation developments up and down the valley extending all the way from Canon City down past Pueblo and on down the Arkansas Valley to the vicinity of La Junta and Las Animas. Each of those ditches have their own diversion and canal systems for distribution of the present Arkansas waters.

They are organized into companies, they are well operated, their systems are well maintained, and they husband their water supplies very carefully, their meager water supplies, in an attempt to get the maximum production out of that water.

Mr. LANGEN. I notice reference to the Southeastern Colorado Conservancy District which has been recently formed and this district contains some 280,600 acres. Are all of these acres irrigated now?

Mr. ASPINALL. Will the gentleman yield, again?

Mr. LANGEN. Yes.

Mr. ASPINALL. The Southeastern Colorado Conservancy District includes the whole area, includes those municipalities and so forth. It does not include the irrigable lands only.

Mr. CHENOWETH. I suggest you point out on the map the area the district embraces, Mr. Ogilvie.

Mr. OGILVIE. The present district starting at the eastern and lowermost end near John Martin Reservoir includes the area shown as purple on the display map. The district boundary extends out beyond and the area which you see in green represents acres that are now irrigated within that district. It extends on up to Pueblo. A small acreage in the area near Colorado Springs is now irrigated inside a rather large district segment. The district extends on up the valley toward Buena Vista.

There are some small irrigation developments near Buena Vista and some below Canon City, but the major irrigated acreage is in the valley below Pueblo. The 280,600 acres which you refer to represent the entire irrigable acreage within that district.

Mr. ASPINALL. Will the gentleman yield again?

Mr. LANGEN. Surely.

Mr. ASPINALL. So we get this right. The taxing base of Pueblo and Colorado Springs is included within this conservancy district; is that right?

Mr. OGILVIE. That is right.

Mr. ASPINALL. So the millage allowable under Colorado law can be placed against all of the taxable property.

Mr. OGILVIE. Yes, sir; that is correct. The present valuation in 1958 of that entire Southeastern Conservancy District is slightly in excess of $400 million.

Mr. LANGEN. Did I understand you correctly, the purple part of the map, those acres are not irrigated now, but are irrigable?

Mr. OGILVIE. No, sir.

Mr. LANGEN. What is the difference then between the purple and the green?

Mr. OGILVIE. These acreages outside of the green are not irrigated now and it is not proposed under this plan to bring any new acres under irrigation, but only to furnish supplemental water to the presently irrigated lands.

Mr. AANDAHL. Mr. Langen, may I volunteer a statement I think might be helpful?

Mr. LANGEN. Yes.

Mr. AANDAHL. The conservancy district oftentimes embraces areas outside of the irrigable acreage which has indirect benefits from the project and it is desirable to put the tax base back of the project into a conservancy district.

Mr. LANGEN. May I ask about the statement which says the conservancy district is anxious to negotiate a repayment contract con-

sistent with its obligation. What is meant by that? It would seem this would be a pretty large and significant contract. What would be the specifics of such a contract?

Mr. PALMER. Mr. Langen, it would be a very large contract in terms of dollars. In the reevaluation report on the next to the last schedule, the estimated allocations and amounts to be repaid are listed and the amount showed to be repaid by the irrigator. The conservancy district would be expected to underwrite an obligation approximating $48 million.

Mr. LANGEN. What are the crops that are produced from this land that is irrigated?

Mr. OGILVIE. They have garden crops—vegetables, tomatoes, melons, and things like that, sugar beets, alfalfa, a few small grains, and some beans. Those are the primary crops.

Mr. LANGEN. To what degree would the production of those crops be improved by virtue of this project? Have estimates been made on how much they might be increased or decreased over a period of years?

Mr. OGILVIE. The crops would be significantly improved because the average annual headgate shortages in this district amount to about 317,000 acre-feet annually.

If the project were to be constructed, it would cut that average annual shortage about in half, which means there would be a significant amount of water available in the critical growing period to augment existing water supplies and top those crops off.

Mr. ASPINALL. Will the gentleman yield?

Mr. LANGEN. Yes.

Mr. ASPINALL. I know what is bothering my colleague. The question is this: What effect would this have upon agricultural products that are now in surplus? Would we increase our surpluses on those products or would we, by furnishing this water, tend to cause more and more the growing of row crops which are not in surplus?

Mr. OGILVIE. I think you would find that the dependable water supply would afford an opportunity for rotation and going to the smaller row crops that are not in surplus but are in demand. Through that switching in the pattern of cropping, the project would not contribute to surplus crop production.

Mr. LANGEN. You say going to row crops. What are they going from? Are they raising small grains now or what are they shifting from and what to?

Mr. OGILVIE. There is a minor amount of small grains raised in the area. However, I would like to point out that the small grains that are raised there now fit into their feeding industry, which is a companion industry to the farming industry and the grains that they do raise are largely used and fed in the feedlots in fattening out cattle.

Mr. PALMER. Might I also add that one of the significant contributions of this agriculture in this area now and as it will be enhanced by the project, is balancing out range use. That entire area is surrounded by much dry pastureland both in the mountains and in the valleys and much of this is feed base land which is used as Mr. Ogilvie has suggested in balancing out range livestock operations.

So it does not fall into the surplus.

Mr. LANGEN. I appreciate that, of course. Let me inquire a little further. You say a small amount. What is a small amount of 280,000 acres might still be a substantial amount of acres. How many acres of feed crops, grains——

Mr. OGILVIE. I do not have the exact answer for that. I would be glad to furnish it for the record.

Mr. CHENOWETH. Will the gentleman yield?

Mr. LANGEN. Yes.

Mr. CHENOWETH. We will have as one of our witnesses a farmer who will answer those questions and give you the full figures on just what they are raising in the valley and how this project will affect their crops.

Mr. LANGEN. If I may state further, the reason I am inquiring is because of having noticed a surplus in feed grains; whether it be oats, barley, corn, and so on, up in the valley where I live under present price structure we cannot raise those grains, and I think we have a very productive area, without the cost of irrigation. I fail to see how, under the price structure, adding the costs of irrigation, this can possibly be a profitable endeavor. By the same token, while it is true that possibly a lot of this feed is used to fatten stock and so on, at the same time as long as we have these surpluses on hand and can supply them to most any area in the United States, at a pretty reasonable price, if I may say, I wonder about the principle of taking tax dollars to promote a further production, whether they are used in the area or not.

Mr. CHENOWETH. Will the gentleman yield again?

Mr. LANGEN. Surely.

Mr. CHENOWETH. I think Mr. Ogilvie should take the time to explain to the gentleman from Minnesota what the impact of this project is going to be on the land now under cultivation. We are not going to bring any new land into cultivation.

What will the irrigation farmers do in the Arkansas Valley after the project is completed that they are not able to do now? Can you give us that picture, or would you rather wait for Mr. Cooper to give those figures?

Mr. OGILVIE. I can give you a representative example I think that may be indicative of the thing you are pointing to.

Mr. CHENOWETH. You see what is troubling the gentleman from Minnesota?

Mr. OGILVIE. Yes, sir.

Mr. CHENOWETH. He wants to be helpful and he wants some information so he can justify his support of this project.

Mr. OGILVIE. In response to your further questioning, I would point out that to the north on the Colorado-Big Thompson project, where we have supplied this supplemental water supply, using the sales tax returns as an indicator, the returns from sales tax very gradually climbed during the period of study and represent about a 10-percent yearly increase, while a similar indicator in the Arkansas River Valley shows a continuing decline in sales tax receipts in the Arkansas River area in the valley.

Now that is representative to me and indicative of what the supplemental water will do in an irrigated area.

Mr. CHENOWETH. I wonder if you could tell the gentleman from Minnesota how much supplemental water you are going to get and

what the practical effect of that would be on these crops? Can you give that information to him in a few words?

Mr. OGILVIE. Yes, sir; I can.

The additional headgate supply which this project will provide to the irrigated acres in the district will average 163,100 acre-feet annually.

Mr. CHENOWETH. I am talking about the individual farmer now. How much more water will he get for his land?

Mr. OGILVIE. He will get approximately 20 percent more water than he is presently getting.

Mr. CHENOWETH. I have in mind the figure of 0.6 of an acre-foot.

Mr. OGILVIE. If he were using as much as 2 acre-feet he would get 20 percent additional, representing a substantial amount of additional water for that farmer.

Mr. CHENOWETH. Would he be able to get the water at the time he needed it?

Mr. OGILVIE. That is very important, the fact the water would be stored in Pueblo Reservoir at the head of the major irrigation works and could be released down the river at the critical times of need, the late growing season when they need that supplemental water to top off their already started crops.

Mr. CHENOWETH. This project is not going to result in the growing of any new agricultural products, but is going to insure the production of the crops he is now trying to raise, due to the fact he will have water at the right time; is that right?

Mr. OGILVIE. That is correct.

Mr. CHENOWETH. I think the gentleman from Minnesota is disturbed over the possibility this project may result in the raising of crops in competition with the farmers of Minnesota and certainly he has a right to be concerned and apprehensive. I am anxious to see that he gets full information and responsive answers to his questions.

Mr. LANGEN. I thank the gentleman for his help on my inquiry. May I ask how many sugar beets are produced on the 280,000 acres?

Mr. OGILVIE. I would have to furnish that for the record.

Mr. LANGEN. You do not have any idea of how many there?

Mr. OGILVIE. No, sir; I do not have that figure, here.

Mr. PALMER. We will supply that, Mr. Langen. The one crop that I believe would be significant in this instance is sugar beets which are under present allotment completely consistent with established Federal policy in sugar beet production.

So this project would not change in any way in and of itself the amount of sugar beets that would be produced in the valley.

Mr. LANGEN. I would appreciate, surely, it would be under the allotment system, as they are all over the Nation.

Mr. PALMER. That is right.

Mr. LANGEN. But the next question in line with that was, What would you anticipate is going to be the increased production on the acres you are now raising? It was mentioned and certainly it is logical to assume that with the added expense it is going to have to bring a greater production. I notice, too, the mention that there is going to be a diversion of acres and I was wondering whether it was contemplated that some of these acres might be diverted to sugar beets.

Mr. PALMER. I would believe that, absent some Federal pronouncement to the contrary, there would be very little chance of additional beet allotments going to that valley.

One thing to consider is, farming with a limited water supply, the farmer of necessity puts his water on his best money crops. So he probably is taking pretty good care of his beet sugar allotments, as is. He therefore is forced frequently to plant some of the remaining acreage into, well, cereal grains is a good example where one watering will bring the crop up and he can get a harvest, he can get something to market from that.

Whereas, if he had a reliable water supply, he would tend to go to more vegetables and things of that nature that can be produced in that valley economically and will net him out a higher return. Basically, small grains are not good irrigation crops. They do not compete. So the very fact that you have a good and reliable water supply tends to divert agriculture in the area away from the surplus crops.

Mr. CHENOWETH. Will the gentleman yield?

Mr. LANGEN. Surely.

Mr. CHENOWETH. I might say to the gentleman there are two beet sugar factories in this area. There were three up until last year. We will have a sugar beet farmer here. I am sure he can answer the questions of the gentleman. I hope you will be here when Mr. Cooper of Las Animas, Colo., appears, because I think he will give you the answers to your questions.

Mr. ASPINALL. Will the gentleman yield?

Mr. LANGEN. Yes.

Mr. ASPINALL. This testimony is in the former hearings. We have it pretty well firmed up as far as that is concerned, but the gentleman should be satisfied.

Mr. LANGEN. May I just make this one further inquiry?

It is my understanding this information is going to be furnished or possibly has been furnished in other hearings, and that is the breakdown of the crops that are raised on the 280,000 acres presently irrigated and the extent to which there is anticipated a diversion from one crop to another together with the anticipated increased agricultural income resulting from the irrigation proposal.

That is all, Mr. Chairman.

(The information referred to follows:)

Crops, acreages, yields, and returns to farmers—Southeastern Colorado Conservancy District, Fryingpan-Arkansas project, Colorado

Crop	Acreage		Yield		Unit	Price	Returns to farmer	
	Without	With	Without	With			Without	With
	Thousands	*Thousands*	*Thousands*	*Thousands*			*Thousands*	*Thousands*
Alfalfa	126.9	119.8	400	515	Ton	$23.11	$9,244	$11,902
Forage	5.0	5.0					1,100	1,250
Grains	109.1	113.6	4,907	6,964	Bushel	1.40	6,870	9,750
Sugar beets	15.9	22.6	203	355	Ton	15.32	3,110	5,439
Beans	4.8	5.4	4,924	7,149	Pound	.0575	283	411
Fruit and vegetables	11.5	9.9	1,204	1,594	Hundredweight	3.46	4,166	5,515
Seed crops	3.4	1.0	1,005	355	Pound	.50	502	178
Popcorn	4.0	3.3	7,618	8,744	do	.050	381	437
Total	280.6	280.6					[1] 25,656	[1] 34,882

[1] Includes estimated returns of $5,327,000 (without) and $6,300,000 (with) from feed and forage fed to livestock in farm feed lots.

Mr. ASPINALL. I would suggest that the gentleman satisfy himself. The original report has some answers to his questions. If they are not satisfactory, I would suggest the Department furnish the additional information Mr. Langen wants because he certainly is in a very good position to have his mind cleared up on what the effect of this project is going to be.

The gentleman from Oregon, do you have any questions?

Mr. ULLMAN. Mr. Chairman, I would like to ask what are the allocation for fish and wildlife and for recreation?

Mr. PALMER. For the project as a whole?

Mr. ULLMAN. I am thinking of the Ruedi Dam.

Mr. PALMER. Yes, sir, Mr. Ullman; on page 2, I believe, of the statement——

Mr. ULLMAN. I have the overall $5,231,000 to be allocated to municipal and industrial water supply, flood control, fish and wildlife, and recreation use. Do you have a breakdown of that $5 million figure?

Mr. PALMER. This is a breakdown of the $5 million figure. The remaining costs of Ruedi Dam and Reservoir that are associated with the Fryingpan-Arkansas project independently of the west slope development are picked up and briefed in the reevaluation statement which is also before the committee.

In other words, those would bear the same relationship to total project costs that the other works in the eastern slope would bear.

Mr. ULLMAN. The same ratio?

Mr. PALMER. Yes, sir, Mr. Ullman; fish and wildlife, $2,081,000. The fish and wildlife allocation as given in the reevaluation statement is $2,081,000. A part of that, whatever portion of it is associated with the Fryingpan-Arkansas project, is picked up in a part of this $13 million Ruedi cost. I am not sure I am making that plain. The specific allocation of the $5 million is detailed on my statement. The allocation of the remaining $7,600,000 becomes a part of the overall allocation in the reevaluation statement.

Mr. ULLMAN. But the $2,081,000 comes out of the $5 million; is that right?

Mr. PALMER. No, sir. The $2,081,000 comes out of the remaining portions, the total remaining portion of the project.

Mr. ULLMAN. I see. You do not have a specific breakdown of the $5,231,000?

Mr. PALMER. Yes, sir; on the basis of the $5,231,000 portion of the cost of Reudi assigned to the Colorado River development, the allocation is $1,757,800 to fish and wildlife and $55,000 to recreation, these being the same figures that appear in my statement.

Mr. SISK. Will the gentleman yield?

Mr. ULLMAN. Yes.

Before I do, I would state it is rather confusing and I hope somewhere in here I will be able to, by studying, find out exactly what the allocations are because I have a very fuzzy picture of it and you have to help me.

Mr. PALMER. Mr. Ullman, maybe I can clear this up. If you wanted the total allocation to fish and wildlife for the entire project, including all of Ruedi Dam and Reservoir, it would be the sum of $2,081,000 plus $1,757,800. If you want the entire amount allocated

to recreation, it would be the $55,000 only, that being the only allocation to recreation. If you want the flood control allocation, that would be $15,226,000, plus $117,500.

The reason these figures are broken down is you have a part of the allocation running to the Colorado River side, the portion of Ruedi that is allocated to the Colorado River side and the portion of Ruedi that is allocated to the Fryingpan-Arkansas project.

Mr. ULLMAN. How much is allocated to municipal and industrial water supply?

Mr. PALMER. As far as the Fryingpan-Arkansas project is concerned, the allocation is approximately $22 million. It is the sum of $8,438,000, plus $13,761,000. The municipal and industrial allocation in Ruedi Dam and Reservoir is $3,300,700, chargeable to Colorado River development.

Mr. ULLMAN. That is for municipal and industrial water?

Mr PALMER. Yes, sir.

Mr. ULLMAN. I think you have clarified the situation.

Thank you, Mr. Chairman. Did the gentleman want me to yield to him?

Mr. SISK. Yes.

Mr. ASPINALL. The gentleman is recognized.

Mr. SISK. I have been attempting to pursue as best I could briefly here this report on Ruedi Dam and Reservoir. Let me ask, is the Bureau continuing to study and have even now current studies going on to firm up a little more this Ruedi Dam and Reservoir program with reference to not only the project itself, but the possible use of the water.

Why I am asking this question—I hope my colleague understands this is a friendly question because I am sympathetic to this project. I understand you say this is primarily due to the time element—I find there seems to be quite a few omissions in it. That is the point of my question, To what extent do you propose to do additional studying within the next 6 months, or year, in developing what seems to me to be some additional information needed on firming up the information on Ruedi on the possible uses and the effect? You are actually changing the reservoir, as I understand, from 28,000 acre-feet at Aspen, to 100,000-acre-foot reservoir at Ruedi; is that correct?

Mr. PALMER. Yes, sir; that is correct.

Mr. SISK. What has the Bureau actually done?

Mr. PALMER. I would like to have Mr. Ogilvie comment on the studies that he used on Ruedi, those that are now underway, if any, and those that are envisioned. I would like to have him also touch briefly on the studies made at the behest of the State of Colorado into the water requirement of the oil shale industry.

Mr. OGILVIE. The studies for Ruedi Reservoir are good studies based on the information we had available inasmuch as there had been considerable work done on this particular reservoir during some earlier studies in connection with the Blue-South Platte investigation. Ruedi was a potential reservoir under that study and we utilized a great deal of information which we had in arriving at our cost estimates on this reservoir.

We do not have any studies in progress at the moment on Ruedi Reservoir which would further the status of this work, but that is one

of the first things that we would do, if we were to go ahead with this project. We would collect additional information and firm up the studies on Ruedi Reservoir and particularly the downstream use for that additional storage space.

Mr. SISK. Mr. Ogilvie, in the interest of time, I am going to simply state that I think you understand my concern here. Of course, as I understand this report, there is no water to be diverted to the Fryingpan and the Arkansas River until this project is completed. That is the way I understand the wording here.

So, to some extent, this becomes a very valuable part of the thing and I want to be sure you people are in position to answer what I am sure will be direct questions on how firm this situation is.

Thank you, Mr. Chairman, for the time.

Mr. ASPINALL. There have been cost estimates made of Ruedi Reservoir and you are pretty firm on what the cost is, are you not?

Mr. OGILVIE. Yes, sir.

Mr. ASPINALL. And the State of Colorado has entered into that program and spent thousands of dollars and given of the services of their staff along with your staff in determining whether or not Ruedi is physically feasible and what it will cost?

Mr. OGILVIE. That is correct, sir.

Mr. ASPINALL. The thing that disturbs me, as it disturbs the gentleman from California, and I made reference to it before, is the statement on page 2 of your remarks, Mr. Palmer—

> The remaining cost of $5,231,000 has been allocated to west slope benefits as follows: municipal and industrial water, $3,300,700.

Now, that is largely arrived at because of the studies that were made on the oil shale problem; is that right?

Mr. PALMER. Yes, sir. That is correct.

Mr. ASPINALL. Fish and wildlife, $1,757,800. And you are firm on that, are you not?

Mr. PALMER. Yes, sir. That is right.

Mr. ASPINALL. Flood control, $117,500, and you are firm on that?

Mr. PALMER. Yes, sir. That is right.

Mr. ASPINALL. And recreation $55,000. You are firm on that?

Mr. PALMER. Yes, sir. That is right.

Mr. ASPINALL. So, the only amount that remains where there is any indefiniteness at all is $3,700,700.

Mr. PALMER. Right.

Mr. ASPINALL. Because of the study that was made and because of the position taken by the Department of Defense and the Department of the Navy, which has control of the oil shale reserve, the $3,300,700 was the figure arrived at. But there is a possibility that a great part of the water can be used in what is known as the Cattle Creek area; is that not right?

Mr. PALMER. That is correct, sir. Providing the later studies show it is a feasible project. Mr. Aspinall, let me ask you this: Why did you tie this legislation to the Water Supply Act instead of tying it to revenues out of the Colorado River Basin fund, to which the State of Colorado is entitled?

Mr. OGILVIE. Mr. Chairman, we did that because the municipal and industrial requirement appeared to be the more pressing requirement and the information that we had represented an alternative which we could clearly foresee.

Now, the information we have with respect to the Cattle Creek unit or Sopris unit or Blue Stone unit, which include additional acreage for irrigation, is of preliminary nature and represents a very possible use for the surplus water out of Ruedi Reservoir. Based on studies that we would hope would be made there at some future date, that may very well be the purpose to which that water is put.

Mr. ASPINALL. With what has happened to the prospective oil shale industry within the last 8 or 10 months, you cannot make the statement you just made. The municipal water program does not become most imminent of these various uses to which this water can be put. Am I not correct?

Mr. PALMER. I think you are correct on that, Mr. Chairman.

Mr. ASPINALL. There is one thing that the chairman of the full committee wants to have done as far as this legislation is concerned and I think it is absolutely necessary as far as getting favorable action from the House of Representatives and that is to keep the payout period within 50 years for all the reimbursable money. Now, you cannot do it with this reference to municipal water, can you?

Mr. PALMER. No, sir. The reference to municipal water necessarily results in a deferred period.

Mr. ASPINALL. But if the State of Colorado is entitled to sufficient funds out of the upper basin program, the State of Colorado can go ahead and make payment for this water within the 50-year period, whether it is to be used for municipal purposes or for irrigation purposes, and then the State of Colorado can see to it that if its funds were taken from the Colorado River Basin fund later on they could be replaced when this water is used, could it not, and when the payment is made?

Mr. PALMER. I think some arrangement like that could be worked out in the State of Colorado.

Mr. ASPINALL. Otherwise, we go before the House of Representatives and we say we are proposing that the repayment of $3,300,700 be postponed indefinitely. Do you understand the State of Colorado has guaranteed the payment of this $3,300,700 within the 50-year period by your reference to the Water Supply Act?

Mr. PALMER. It would be within the 50-year period from the time they start paying.

Mr. ASPINALL. That is right. And if they did not start using that water for 40 years, then the payout period would be 40 years plus 50, is that not correct?

Mr. PALMER. I believe the deferred payment is 10 years, is it not?

Mr. BENNETT. Deferment for 10 years is only on the interest payment.

Mr. ASPINALL. That is right. That is something we must have settled in this legislation before we go to the floor of the House. It is my understanding of the situation that Colorado's entitlement to a share of those Colorado River Basin funds will permit this project to stay within the recognized policy with reference to the repayment period of reclamation law.

Are there any other questions?

Our time is just about up.

Mr. CHENOWETH. I have one question, Mr. Chairman.

Mr. ASPINALL. The gentleman from Colorado?

Mr. CHENOWETH. Mr. Chairman, I am not sure you have made clear to the committee that the 69,100 feet of water is not the only additional water which is going to be made available to the farmers. Would you tell the committee about the reregulation features of the project and how much water is going to be made available?

Mr. OGILVIE. Yes, sir; 69,100 acre-feet of water to be diverted from the west slope annually.

Mr. CHENOWETH. That is new water?

Mr. OGILVIE. That is new water. In addition, there are reregulated floodflows in the Arkansas River Valley that can be picked up, there are return flows from municipal, industrial, and irrigation uses and there are storage of waters that are presently being diverted and put on the land during the winter, all of which represent an additional headgate supply during the critical summer irrigation period.

Now, all of those waters combined result in a total additional headgate supply during the irrigation season of 163,100 acre-feet within the Southeast Colorado Conservancy District.

Mr. CHENOWETH. Is that in addition to the new water, the 69,100?

Mr. OGILVIE. No, sir; 69,100 is part of the 163,100 acre-feet.

Mr. CHENOWETH. You would pick up about 100,000 acre-feet, then, of water through reregulation that we are losing now?

Mr. OGILVIE. Yes, sir.

Mr. CHENOWETH. I had the impression it was a little larger amount than that in your previous estimates.

Mr. OGILVIE. The previous estimate was 185,000 acre-feet additional headgate supply and that was based on the anticipated district extending below John Martin Reservoir. That is no longer the case. So, the additional headgate supply for those acreages above John Martin Reservoir, within the irrigation district is now 163,100 acre-feet. There would be some additional headgate supply for other lands below John Martin Reservoir as a result of the return flows. It is outside of the district, however.

Mr. CHENOWETH. Thank you very much.

Mr. ASPINALL. Unless there is an objection, the statement entitled "Reevaluation Statement, Fryingpan-Arkansas Project, Colorado" will be made a part of the hearings of today and will be printed as an appendix to the hearings, when they are printed.

Hearing no objection, it is so ordered.

The committee will adjourn until 9:45 tomorrow morning. We are likely to be busy on the floor this afternoon. If we do not finish in the morning, there is a possibility we could have an hour or two in the afternoon. The committee stands adjourned.

(Whereupon, at 11:45 a.m., the subcommittee was recessed, to reconvene at 9:45 a.m., Tuesday, June 7, 1960.)

FRYINGPAN-ARKANSAS PROJECT, COLORADO

TUESDAY, JUNE 7, 1960

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON IRRIGATION AND RECLAMATION OF THE
COMMITTEE ON INTERIOR AND INSULAR AFFAIRS,
Washington, D.C.

The subcommittee met at 9:50 a.m., pursuant to adjournment, in the committee room, New House Office Building, Hon. Walter Rogers (chairman of the subcommittee) presiding.

Mr. ASPINALL (presiding). The Subcommittee on Irrigation and Reclamation will now be in session for the further consideration of H.R. 9229 and companion bills.

This morning, as our first witness, we have Mr. Felix Sparks, director of the Colorado State Water Conservation Board. Mr. Sparks will state, as I understand, the official position of the State of Colorado. We are glad to have you with us, Mr. Sparks. You may proceed.

STATEMENT OF FELIX SPARKS, DIRECTOR, COLORADO STATE WATER CONSERVATION BOARD

Mr. SPARKS. Mr. Chairman and members of the committee, my name is Felix L. Sparks. I appear here as the director of the Colorado Water Conservation Board, the official agency of the State of Colorado pertaining to the development of the State's water resources.

The State water board has long considered the Fryingpan-Arkansas project to be one of the key units to the development of Colorado's water resources. This reason is obvious with the knowledge that the Arkansas Valley in Colorado contains about 25 percent of the State's population, but produces only about 7 percent of the State's surface water supply.

The cities of Pueblo and Colorado Springs in the Arkansas River drainage rank next to Denver in both size and economic importance. The economy of the valley is greatly diversified, but with one great problem—the lack of adequate water supplies. At this moment, John Martin Reservoir, the largest in the valley, is already dry, and the irrigation season is just getting underway.

As far back as 50 years ago, the dependable flows of the Arkansas River and its tributaries had already been appropriated. Since that time, an extensive reservoir system has been constructed to utilize the erratic floodflows, and some water has been imported from the Colorado River Basin. This fact was recognized many years ago. As a result, the Fryingpan-Arkansas project plans were brought into existence. This project contemplates the average annual diversion of

about 70,000 acre-feet of water from the Colorado River Basin to the Arkansas Valley.

This project is not new to the members of this committee. The fulfillment of the project plans has been slow to the point of frustration, largely as a result of our own inadequate efforts within the State of Colorado. Nevertheless, the authorization of the project has the highest and first priority at our State policy level, and this must necessarily be so until the project becomes a reality.

In a determined effort to solve our internal problems which have plagued this project, some major changes have been made in the project plans. These changes have already been explained in detail by the very competent representatives of the U.S. Bureau of Reclamation.

Reudi Reservoir has been substituted for the Aspen Reservoir, a change which has increased the western Colorado storage features of the project by about four times, at less than twice the cost of the original Aspen Reservoir. The operating principles have also been modified to some extent. The net result has been that the project now has the solid endorsement of all official agencies of our State, including those agencies west of the Continental Divide.

No reclamation project in the history of our State has ever received such an expenditure of local funds nor more intensive effort. Through June 30, 1959, almost $600,000 had been expended on the project by the people of Colorado. We are still pursuing with State funds the investigation of alternate uses of water from Reudi Reservoir.

To digress here a moment, we will expend another $200,000 within the next 2 or 3 years, in determining all possible uses of water from Reudi Reservoir.

In addition to its replacement capacity, this reservoir will provide irrigation, municipal, and industrial water for western Colorado.

In short, the Fryingpan-Arkansas project is statewide both geographically and in importance. I will add here that the proper court of our State has granted the necessary decree for the water rights for the project.

It is already a matter of past record that various interests in southern California have opposed the construction of this project. The basis for this opposition is not entirely clear to us, since the water to be utilized originates entirely in Colorado and is well within our allocation under the terms of the Colorado River compact and the Upper Colorado River Basin compact.

Nevertheless, we have negotiated with the Colorado River Board of California to the end that any objections of that agency might be satisfied. As a result, certain amendments to the pending legislation have been agreed upon.

I ask to submit for the consideration of this committee, as a part of this statment, the proposed legislation containing these amendments as agreed to between the State of Colorado and the Colorado River Board of the State of California.

Other amendments pertaining to limitations on the quantity and place of use of our water were proposed. I will merely observe that limitations along this line would do violence to the Colorado River Compact, the Upper Colorado River Basin compact, and our State constitution, and accordingly can never be seriously considered by the people of Colorado.

We in Colorado shall be eternally grateful for the favorable consideration of this committee on the legislation here pending. The committee has already shown great patience in permitting past hearings on the project legislation. We again thank you for the opportunity to be heard on this occasion.

I would like to add, Mr. Chairman, that there was some discussion yesterday about the repayment period of this project. I can only state that it is our intention in Colorado to repay this project within the 50-year period, as the law prescribes in any manner that this committee may deem proper.

Mr. ROGERS (presiding). Mr. Sparks, you made mention in your statement of submitting to the committee, as part of the statement, the proposed legislation.

Mr. SPARKS. Yes.

Mr. ROGERS. We have copies now. Is there objection to this document being made a part of the record?

Mr. ASPINALL. Reserving the right to object, and I shall not object, you have attached to this proposed legislation incorporating the amendments agreed upon by and between the interests of Colorado and California, a copy of the new operating principles. Those have not yet been placed in the record of the Fryingpan-Arkansas project hearings, have they?

Mr. SPARKS. They have not.

Mr. ASPINALL. I ask that they also be included in the record.

Mr. ROGERS. Without objection, all of the instruments referred to will be included in the record at this point.

(Documents referred to follow, as ordered later.)

COLORADO WATER CONSERVATION BOARD

January 15, 1960

[Changes proposed by the Colorado River Board of the State of California, tentatively accepted by the State of Colorado, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman)]

[H.R. 9229 (Aspinall), 9230 (Chenoweth), 9231 (Rogers), and 9232 (Johnson); S. 2700 (Allott and Carroll); 86th Cong., 1st sess.]

A BILL To authorize the construction, operation, and maintenance by the Secretary of the Interior of the Fryingpan-Arkansas project, Colorado

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That for the purposes of supplying water for irrigation, municipal, domestic, and industrial uses, generating and transmitting hydroelectric power and energy, and controlling floods, and for other useful and beneficial purposes incidental thereto, including recreation and the preservation and propagation of fish and wildlife, the Secretary of the Interior is authorized to construct, operate, and maintain the Fryingpan-Arkansas project, Colorado, in substantial accordance with the engineering plans therefor set forth in House Document Numbered 187, Eighty-third Congress, modified to substitute the [Reudi] *Ruedi* Dam and Reservoir for the Aspen Dam and Reservoir as proposed in the September 15 report of the Bureau of Reclamation entitled "[Reudi] *Ruedi* Dam and Reservoir, Colorado", with such modifications of, omissions from, or additions to the works described in those reports as he may find necessary or proper for accomplishing the objectives of the project. Such modifications or additions as may be required in connection therewith shall not, however, extend to or contemplate the so-called Gunnison-Arkansas project[.] *and nothing in this act shall constitute a commitment, real or implied, to the further exportation of water from the Colorado River system.* In constructing, operating, and maintaining the Fryingpan-Arkansas project, the Secretary shall

be governed by the Federal reclamation laws (Act of June 17, 1902; 32 Stat. 388, and Acts amendatory thereof or supplementary thereto).

(b) The reservoir at the [Reudi] *Ruedi* site on the Fryingpan River with an active capacity of approximately one hundred thousand acre-feet shall be constructed in lieu of the reservoir on the Roaring Fork River at the Aspen site contemplated in House Document Numbered 187, Eighty-third Congress. The Secretary shall investigate and prepare a report on the feasibility of a replacement reservoir at or near the Ashcroft site on the Roaring Fork River above its confluence with the Fryingpan River with a capacity of approximately five thousand acre-feet, but construction thereof shall not be commenced unless said report, which shall be submitted to the President and the Congress, demonstrates the feasibility of said reservoir.

(c) No part of the specific municipal water supply works described in House Document Numbered 187, Eighty-third Congress, shall be constructed by the Secretary in the absence of evidence satisfactory to him that it would be infeasible for the communities involved to construct the works themselves, singly or jointly. In the event it is determined that the works, or any of them, are to be constructed by the Secretary, a contract providing, among other things, for payment of the actual cost thereof, with interest as hereinafter provided, as rapidly as is consistent with the contracting parties' ability to pay, but in any event, within fifty years from the time the works are first available for the delivery of water, and for assumption by the contracting parties of the care, operation, maintenance, and replacement of the works shall be a condition precedent to construction thereof.

SEC. 2. (a) Contracts to repay the portion of the cost of the Fryingpan-Arkansas project allocated to irrigation and assigned to be repaid by irrigation water users (exclusive of such portion of said cost as may be derived from temporary water supply contracts or from other sources) which are entered into pursuant to subsection (d), section 9, of the Reclamation Project Act of 1939 (53 Stat. 1187), as amended, shall provide for a basic repayment period of not more than sixty years and shall not provide for any development period. Such contracts shall be entered into only with organizations which have the capacity to levy assessments upon all taxable real property located within their boundaries.

(b) Rates charged for commercial power and for water for municipal, domestic, or industrial use or for the use of facilities for the storage and/or delivery of such water shall be designed to return to the United States, within not more than fifty years from the completion of each unit of the project which serves those purposes, those costs of constructing, operating, and maintaining that unit which are allocated to said purposes and interest on the unamortized balance of said construction allocation and, in addition, within the period fixed by subsection (a) of this action, so much of the irrigation allocation as is beyond the ability of the water users and their organizations to repay.

(c) The interest rate on the unamortized balance of the commercial power and municipal, domestic, and industrial water supply allocations shall be determined by the Secretary of the Treasury, as of the beginning of the fiscal year in which construction is initiated, on the basis of the computed average interest rate payable by the Treasury upon its outstanding marketable public obligations, which are neither due nor callable for redemption for fifteen years from date of issue.

(d) There shall be charged to the Fryingpan-Arkansas project $7,600,000 of the reimbursable construction costs of the Ruedi Reservoir, or any substitute therefor, and said $7,600,000 shall be returned from revenues derived from the operation of other features of said project within the period provided in subsection (b) of this section. The remainder of the reimbursable construction costs of the Ruedi and Ashcroft Reservoirs or substitutes therefor shall be returned as if they were participating projects under the Act of April 11, 1956 (70 Stat. 105), and all net revenues derived from their operation shall be paid into the Upper Colorado River Basin Fund as provided in section 5 of said Act.

SEC. 3. (a) The Fryingpan-Arkansas project shall be operated under the direction of the Secretary in accordance with the operating principles set forth in the [above-mentioned reports.] *September 1959 Report of the Bureau of Reclamation entitled "Ruedi Dam and Reservoir, Colorado", and reproduced in schedule A to this Act, or any modification thereof which may be accomplished under paragraph 19 of said operating principles.*

(b) The Secretary may appoint the two representatives of the United States to the Commission referred to in paragraph [17] *19* of said principles. [and may

adopt modifications thereof upon the recommendation of the Commission in conformity to the provisions of paragraph 17 of said principles.]

(c) Any and all benefits and rights of western Colorado water users in and to water stored in the Green Mountain Reservoir, Colorado-Big Thompson project, as described, set forth, and defined in Senate Document Numbered 80, Seventy-fifth Congress, shall not be impaired, prejudiced, abrogated, nullified, or diminished in any manner whatever by reason of the authorization, construction, operation, and maintenance of the Fryingpan-Arkansas project.

(d) Except for such rights as are appurtenant to lands which are acquired for project purposes, no valid right to the storage or use of water within the natural basin of the Colorado River in the State of Colorado shall be acquired by the Secretary of the Interior through eminent domain proceedings for the purpose of storing or using outside of said basin the water embraced within that right, and no water, the right to the storage or use of which is so acquired by anyone other than the Secretary, shall be transported through or by means of any works of the Fryingpan-Arkansas project from the Colorado River Basin to the Arkansas River Basin.

SEC. 4. (a) The Secretary is authorized to plan, construct, operate, and maintain public recreational facilities on lands withdrawn or acquired for the development of the Fryingpan-Arkansas project, to conserve the scenery, the natural historic, and archeologic objects and the wildlife on said lands, and to provide for public use and enjoyment of the same and of the water areas created by these projects by such means as are consistent with the primary purposes of said project and to mitigate losses of and improve conditions for the propagation of fish and wildlife in connection with the development of the Fryingpan-Arkansas project. The Secretary is authorized to acquire lands and to withdraw public lands from entry or other disposition under the public land laws for the construction, operation, and maintenance of recreational facilities in connection with the said project and to dispose of them to Federal, State, and local governmental agencies by lease, transfer, exchange, or conveyance, upon such terms and conditions as will best promote their development and operation in the public interest.

(b) The costs, including the operation and maintenance costs, of the undertakings described in subsection (a) of this section shall be nonreimbursable and nonreturnable under the reclamation laws, and funds appropriated for carrying out the authorization contained in section 1 of this Act shall, without prejudice to the availability of other appropriated moneys for the same purpose, also be available for carrying out the investigations and programs authorized in this section.

(c) All lands within the exterior boundaries of a national forest which are acquired for recreational or other purposes in connection with the Fryingpan-Arkansas project and which are determined by the Secretary of the Interior to be unnecessary for actual use for purposes other than recreation shall become national forest lands. The Secretary of the Interior shall make his determination hereunder with respect to any tract of land within five years from its acquisition by the United States.

(d) The authority to dispose of lands contained in subsection (a) of this section shall not be exercised by the Secretary of the Interior with respect to national forest lands without the concurrence of the Secretary of Agriculture.

SEC. 5. The Secretary is authorized to enter into an agreement with any public school district serving an area affected by construction of the Fryingpan-Arkansas project pursuant to which there will be paid to the district, annually or semiannually, from appropriations made for construction of the project, an amount substantially equal to the average per pupil cost of operating the district's schools during the school year or term for which payment is made, multiplied by the average number of pupils then enrolled in those schools who are dependents of persons brought into the project area who are engaged in project construction activities. This amount, however, shall be diminished by any payments made or anticipated to be made to the district pursuant to the Act of September 30, 1950, as heretofore or hereafter amended (20 U.S.C., ch. 13). The Secretary shall reduce further the contributions to the school districts in the amount of tax revenues received by the districts by reason of project activities. The Secretary may advance a reasonable portion of the amount estimated to become payable under any such agreement during the then current or ensuing school year or term, but any amount so advanced shall be subject to adjustment after the close of the year or term if it does not fully cover, or if it more than covers, the amount to which the district is found to be entitled under the first

three sentences of this subsection. The Secretary is further authorized, without duplicating assistance to which any such district may be entitled under the Act of September 23, 1950, as heretofore or hereafter amended (20 U.S.C., ch. 14), to make available funds or facilities to provide space in which to carry on educational and related activities.

SEC. 6. (a) The use of water diverted from the Colorado River *system* to the Arkansas River Basin through works constructed under authority of this Act shall be subject to and controlled by the Colorado River compact, the upper Colorado River Basin compact, *the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, the Colorado River Storage Project Act*, and the Mexican Water Treaty (Treaty Series 994), and shall be included within and shall in no way increase the total quantity of water to the use of which the State of Colorado is entitled and limited under said compacts, [statute,] *statutes*, and treaty, and every contract entered into under this Act for the sorage, use, and delivery of such waer shall so recite.

(b) All works constructed under authority of this Act, and all officers, employees, permittees, licensees, and contractees of the United States and of the State of Colorado acting pursuant thereto, and all users and appropriators of water of the Colorado River system diverted or delivered through the words constructed under authority of this Act and any enlargements or additions thereto shall observe and be subject to said compacts, [statutes,] *statutes*, and treaty, as hereinbefore provided, in the diversion, delivery, and use of water of the Colorado River system, and such condition and covenant shall attach as a matter of law whether or not set out or referred to in the instrument evidencing such permit, license, or contract and shall be deemed to be for the benefit of and be available to the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming and the users of water therein or thereunder by way of suit, defense, or otherwise in any litigation respecting the waters of the Colorado River system.

(c) None of the waters of the Colorado River system shall be exported from the natural basin of that system by means of works constructed under authority of this Act, or extensions and enlargements of such works, to the Arkansas River Basin for consumptive use outside of the State of Colorado, and no such waters shall be made available for consumptive use in any State not a party to the Colorado River compact by exchange or substitution; nor shall the obligations of the State of Colorado under the provisions of the Arkansas River compact (63 Stat. 145) be altered by any operations of the Fryingpan-Arkansas project.

(d) No right or claim of right to the use of the waters of the Colorado River system shall be aided or prejudiced by this Act, and the Congress does not, by its enactment, construe or interpret any provision of the Colorado River compact, the upper Colorado River Basin compact, *the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, the Colorado River Storage Project Act*, or the Mexican Water Treaty or subject the United States to, or approve or disapprove any interpretation of, said compacts, [statute,] *statutes*, or treaty anything in this Act to the contrary nowithstanding.

(e) In the operation and maintenance of all facilities under the jurisdiction and supervision of the Secretary of the Interior authorized by this Act, the Secretary of the Interior is directed to comply with the applicable provisions of the Colorado River compact, the upper Colorado River Basin Compact, *the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, the Colorado River Storage Project Act* (*and any contract lawfully entered into by the United States and any of said Acts*), [and] the Treaty with the United Mexican States, *and the operating principles*, [in the storage and release of waters from reservoirs in the Colorado River Basin,] and to comply with the laws of the State of Colorado relating to the control, appropriation, use, and distribution of water *therein*. In the event of the failure of the Secretary of the Interior to so comply, any State of the Colorado River Basin may maintain an action in the Supreme Court of the United States to enforce the provisions of this section and consent is given to the joinder of the United States as a party in such suit or suits, as a defendant or otherwise, and any person or entity whose rights may be affected, impaired, or infringed upon by reason or, as a result of such noncompliance, may maintain an action, suit, or proceeding in the United States District Court in and for the District of Colorado seeking appropriate relief, and consent is hereby given to the joinder of the United States, the Secretary of the Interior, and his subordinate officials, employees, and agents as a party or parties to such action, suit, or proceeding, as a defendant or otherwise.

Sec. 7. The Secretary of the Interior is directed to continue his studies of the quality of water of the Colorado River system, to appraise its suitability for municipal, domestic, and industrial use and for irrigation in the various areas in the United States in which it is used or proposed to be used, to estimate the effect of additional developments involving its storage and use (whether heretofore authorized or contemplated for authorization) on the remaining water available for use in the United States, to study all possible means of improving the quality of such water and of alleviating the ill effects thereof, and to report the results of his studies and estimates to the Congress on January 3, 1961, and every two years thereafter.

SEC. [7] 8. There is hereby authorized to be appropriated for construction of the Fryingpan-Arkansas project (exclusive of expenditures provided for in section 5 of this Act) the sum of $170,000,000 based upon September 1, 1959, prices), plus or minus such amounts, if any, as may be justified by reason of ordinary fluctuations in construction costs as indicated by engineering cost indexes applicable to the type of construction involved herein. Of the aforesaid sum, not more than $13,000,000 shall be available for construction of the [Reudi] *Ruedi* Reservoir, or any substitute therefor, to be accounted for as provided in section 2(d) of this Act. There are also authorized to be appropriated such sums as may be required for operation and maintenance of the project and for expenditures as provided in section 5 of this Act.

SCHEDULE A. OPERATING PRINCIPLES, FRYINGPAN-ARKANSAS PROJECT

Adopted by the State of Colorado, April 30, 1959 (as amended December 30, 1959)

The construction and operation of the project involve the diversion of water from the headwaters of the Fryingpan River and other tributaries of the Roaring Fork River to the Arkansas River Basin. The project contemplates—

(a) The maximum conservation and use of water;

(b) The protection of western Colorado water uses, both existing and potential, in accordance with the declared policy of the State of Colorado; and

(c) The preservation of recreational values.

In order to accomplish such purposes, the project shall be operated by the United States in compliance with the Federal reclamation laws, the laws of the State of Colorado relating to the appropriation, use, or distribution of water, and the following operating principles:

1. As used herein—

(a) "Project" means that certain enterprise planned and designed by the Bureau of Reclamation, Department of the Interior for the transmountain diversion of water from the headwaters of the Fryingpan River and other tributaries of the Roaring Fork River to the basin of the Arkansas River, together with all of its appurtenant works and facilities in both eastern and western Colorado.

(b) "Eastern Colorado" means that portion of the State of Colorado lying within the natural drainage basin of the Arkansas River.

(c) "Western Colorado" means that portion of the State of Colorado lying within the natural drainage basin of the Colorado River and served by diversions made from the Colorado River, or its tributaries, above its confluence with the Gunnison River.

(d) "Southeastern Colorado Water Conservancy District" means that entity created to contract for payment to the United States of an appropriate portion of project costs allocated to certain water uses in eastern Colorado.

(e) "Colorado River Water Conservation District" means that entity created by Colorado Revised Statutes 1953, 149–8, as amended.

(f) "Southwestern Water Conservation District" means that entity created by Colorado Revised Statutes 1953, 149–9, as amended.

(g) "Ruedi Reservoir" means the reservoir presently planned for construction on the Fryingpan River above the town of Basalt as part of the project.

(h) "Ashcroft Reservoir" means not only the reservoir contemplated for construction on Castle Creek, a tributary of the Roaring Fork River, but also, unless the context requires otherwise, any other reservoir that may be constructed in the Roaring Fork Basin above the town of Aspen in lieu of that reservoir.

(i) "c. f. s." means cubic feet of water per second of time.

2. The Ruedi Reservoir shall be constructed and maintained on the Fryingpan River above the town of Basalt with an active capacity of not less than 100,000

acre-feet. In addition thereto and in order to offset adverse streamflow conditions on the Roaring Fork River above the town of Aspen which might occur as a result of the project enlargement of the Twin Lakes Reservoir, the Ashcroft Reservoir on Castle Creek, or some reservoir in lieu thereof, shall be constructed on the Roaring Fork drainage above Aspen to a capacity of approximately 5,000 acre-feet: *Provided, however,* That the Ashcroft Reservoir shall be constructed only if the Secretary of the Interior after appropriate study shall determine that its benefits exceed the costs.

All of such stored water shall be released under the conditions and limitations hereinafter set forth.

3. The reimbursable cost of construction of the Ruedi Reservoir shall be a charge against the Fryingpan-Arkansas project to the extent of $7,600,000. The remaining reimbursable cost of construction of the Ruedi and Ashcroft Reservoirs or substitutes therefor shall be returned as if they were participating projects under the Act of April 11, 1956 (70 Stat. 105), and all net revenues derived from their operation shall be paid into the Upper Colorado River Basin Fund as provided in section 5 of said Act. The cost of perpetual operation and maintenance of the Ruedi Reservoir shall be borne by users of project water and users of water stored in Ruedi Reservoir in such proportion as may be determined by the Secretary of the Interior. The cost of perpetual operation and maintenance of the Ashcroft Reservoir shall be borne by users of water from that reservoir.

4. The inclusion of the Ruedi Reservoir in the project shall not preclude the construction of any other replacement or regulatory reservoirs on the Colorado River or its tributaries above Cameo gaging station.

5. The Ruedi Reservoir shall be completed and in operation before any water is diverted to eastern Colorado by means of the project.

6. (a) The replacement capacity of Ruedi Reservoir, and any reservoir constructed in addition thereto, is that portion of the total reservoir capacity required to permit project diversions at times when such diversions could not otherwise be made because of simultaneous demands of senior diversions in western Colorado existing at the time of the adoption of these operating principles, and shall be so operated to accomplish this purpose. Water stored in such capacity shall be released by the United States, upon the request of the Colorado State engineer, to the extent that water would have been available to said decreed rights except for stream depletion resulting from diversions by this project to the Arkansas Valley.

(b) The regulatory capacity of Ruedi Reservoir, and any reservoir constructed in addition thereto, is that portion of the total reservoir capacity not needed for replacement purposes. Water stored in such category may be sold or leased by the United States to water users in Colorado for any purpose recognized by the laws of the United States: *Provided,* That the sale of water for use outside the natural basin of the Colorado River can only be made with the consent of the Colorado River Water Conservation District. Charges for the use of such water shall be established by the Secretary of the Interior by appropriate contract in accordance with the payment ability of such water users.

7. The primary purpose of Ruedi Reservoir, and any reservoir constructed in addition thereto, is to furnish to the extent of its capacity, in like manner as if the project were constructed by a water conservancy district organized pursuant to the laws of the State of Colorado, the water required for the protection of western Colorado water users by the provisions of Colorado Revised Statutes 1953, 149–6–13, reading as follows: "However, any works or facilities planned and designed for the exportation of water from the natural basin of the Colorado River and its tributaries in Colorado, by any district created under this article, shall be subject to the provisions of the Colorado River compact and the Boulder Canyon Project Act. Any such works or facilities shall be designed, constructed, and operated in such a manner that the present appropriations of water, and in addition thereto prospective uses of water for irrigation and other beneficial consumptive use purposes, including consumptive uses for domestic, mining, and industrial purposes, within the natural basin of the Colorado River in the State of Colorado, from which water is exported, will not be impaired nor increased in cost at the expense of the water users within the natural basin. The facilities and other means for the accomplishment of said purpose shall be incorporated in, and made a part of any project plans for the exportation of water from said natural basin in Colorado."

8. Project diversions from Lime Creek shall be made only in the months of May and June of each year, unless the Colorado River Water Conservation

District shall, by written communication, advise the Colorado State engineer that additional diversions can be made.

9. The respective decrees which may be or have been awarded to the parties hereto as a part of the Fryingpan-Arkansas project and Basalt project shall be administered by the proper officials of the State of Colorado in accordance with the applicable laws of the State of Colorado, and with the following principles and procedures, to wit:

(1) That the demand on the waters available under such decrees shall be allocated in the following sequence:

(a) For diversion to the Arkansas Valley through the collection system and the facilities of the Fryingpan-Arkansas project in an amount not exceeding an aggregate of 120,000 acre feet of water in any year, but not to exceed a total aggregate of 2,352,800 acre feet in any period of thirty-four consecutive years reckoned in continuing progressive series starting with the first full year of diversions, both limitations herein being exclusive of Roaring Fork exchanges as provided in (c) below, and exclusive of diversions for the Busk-Ivanhoe decree; and with the further and absolute limitation that in order to protect existing and future beneficial uses of water in western Colorado, including recreational and fishing values, the State engineer shall so regulate the transmountain diversions above referred to, to the end that no diversions shall be made which will reduce the remaining aggregate streamflows to less than either of the following minimum standards:

(i) The Fryingpan collection system at the points of diversion collectively, exclusive of Lime Creek: 15 c.f.s. October 1 through March 31; 30 c.f.s. April 1 through September 30.

(ii) Near Norrie (immediately below the junction of North Fork and Fryingpan River): 30 c.f.s. October 1 through March 31; 100 c.f.s. April 1 through April 30; 150 c.f.s. May 1 through May 31; 200 c.f.s. June 1 through June 30; 100 c.f.s. July 1 through July 31; 75 c.f.s. August 1 through August 31; 65 c.f.s. September 1 through September 30.

In maintaining the above minimum standards, the project diversions shall be regulated, so far as is practicable, in such a manner that the North Fork of the Fryingpan River, the Fryingpan River, and each of the tributaries of those streams, shall contribute to the residual streamflows required by those minimum standards quantities of water in proportion to their natural contributions.

(b) For storage in Ruedi Reservoir to the extent of its actual capacity, which is to be not less than 100,000 acre-feet.

(c) For 3,000 acre-feet annually, to the extent that it is available in excess of (a) and (b) above, or such part thereof as may be required, to be delivered to the Twin Lakes Reservoir & Canal Co. in exchange for equivalent releases from the headwaters of the Roaring Fork River which would otherwise be diverted through such Twin Lakes Reservoir & Canal Co. collection and diversion system.

(d) For any other beneficial use in western Colorado in accordance with court decree, but not herein contemplated.

(2) The effectuation of the above principles requires concurrent Fryingpan-Arkansas project diversion and Ruedi Reservoir storage to be accomplished in the manner following: The State engineer annually shall collect pertinent data, including information pertaining to snowpack and all other available evidence, and shall thereafter so divide and apportion the surface runoff as to achieve, as nearly as possible, the foregoing division of water and the maximum of concurrent diversions and storage. The diversions herein contemplated shall be on the basis of a water year hereby defined as that interim of October 1 through the following September 30.

10. For the protection of recreational values, including fishing, on the Fryingpan River below Ruedi Reservoir, releases of water from said reservoir, not to exceed the stream inflow, shall be made so that the streamflow immediately below the junction of the Fryingpan River and Rocky Fork shall not be reduced below 39 c.f.s. from November 1 to April 30, and 110 c.f.s. from May 1 to October 30, or as actual experience or court decree shall hereafter dictate.

11. An appropriate written contract may be made whereby Twin Lakes Reservoir and Canal Company shall refrain from diverting water whenever the natural flow of the Roaring Fork River and its tributaries shall be only sufficient to maintain a flow equal to or less than that required to maintain the recommended average flows in the Roaring Fork River immediately above its confluence with Difficult Creek in a quantity proportionate to the respective natural

flow of the Roaring Fork River. The recommended average flows above mentioned are flows in quantities equal to those recommended as a minimum immediately above its confluence with Difficult Creek according to the following schedule submitted by the United States Fish and Wildlife Service and the Colorado Game and Fish Commission:

Month	Average second-feet	Thousand acre-feet	Month	Average second-feet	Thousand acre-feet
October	44	2.7	May	100	6.2
November	35	2.1	June	120	7.1
December	29	1.8	July	100	6.2
January	26	1.6	August	63	3.9
February	25	1.4	September	44	2.6
March	24	1.5			
April	64	3.8	Total		40.9

In maintaining the above averages, at no time shall the flow be reduced below 15 c.f.s during the months of August to April, inclusive, or below 60 c.f.s. during the months of May to July, inclusive, providing the natural flow during said period is not less than these amounts. The obligation to supply the minimum streamflow as set forth in the above table on the Roaring Fork River shall, to the extent of 3,000 acre-feet annually, be a project obligation to be supplied from any waters diverted from the south tributaries of Hunter Creek, Lime Creek, Last Chance Creek, or any of them.

The Twin Lakes Reservoir & Canal Co. shall not be required to refrain from diverting water under its existing decrees from the Roaring Fork River except to the extent that a like quantity of replacement water is furnished to said company without charge therefor through and by means of project diversions and storage.

If by reason of storage capacity in the Ruedi Reservoir, or any reservoir constructed in addition thereto, the Twin Lakes Reservoir & Canal Co. derives additional water or other benefits or advantages it would not have realized had this project not been constructed, then nothing herein contained shall prevent the project from making appropriate charges for such water or other benefits or advantages. All revenues derived from the use of water stored in Ashcroft Reservoir shall be used to assist in the repayment of the construction, operation, and maintenance costs of that reservoir, or any reservoir constructed in lieu thereof, as may be determined by the Secretary of the Interior.

12. All lands acquired and held for project construction and operation and water surfaces of project reservoirs will be open to the public for recreational purposes, excepting those areas reserved by the operating agency.

13. The project will be operated in such a manner that those in eastern Colorado using project water imported from the Colorado River Basin for domestic purposes shall have preference over those claiming or using water for any other purpose.

14. The project is to be operated in such a manner as to secure the greatest benefit from the use and reuse of imported project waters within project boundaries in the State of Colorado.

15. Any and all benefits and rights of western Colorado water users in and to water stored in Green Mountain Reservoir, as described and defined in Senate Document 80, 75th Congress, 1st session, shall not be impaired or diminished by this project.

16. The project, its operation, maintenance, and use shall be subject to the provisions of the upper Colorado River Basin compact of October 11, 1948 (Public Law 37, 81st Cong., 1st sess.), and the Colorado River compact of November 24, 1922 (H. Doc. 605, 67th Cong., 4th sess.).

17. The Colorado River Water Conservation District of the State of Colorado shall acquire title to storage of water in Ruedi Reservoir and any reservoir constructed in addition thereto, by appropriate proceedings in the courts of the State of Colorado. The Southeastern Colorado Water Conservancy District of the State of Colorado shall likewise acquire title to the water required by the project for diversion to the Arkansas Valley. The Secretary of the Interior shall at any time after the authorization of the project have the option to obtain or require the transfer to the United States of any and all rights initiated or acquired by appropriation as herein set forth: *Provided, however,* That the rights so taken shall be subject to a beneficial use of such water as may be

provided in the repayment contract or contracts, and subject to all the operating principles herein set forth.

18. No transmountain diversion of water shall ever be made through the collection and diversion system of the Fryingpan-Arkansas project in excess of the quantitative limitations and conditions established by this document; *Provided, however,* That when, under the laws of the State of Colorado, there may be additional water available for such collection and diversion which is not at the time of diversion required for beneficial use in western Colorado or for filling interstate water compact agreements, then such water may be collected and diverted for beneficial use in the Arkansas Valley: *Provided further,* That such additional diversion shall only be made with the mutual consent of each of the following agencies of the State of Colorado, to wit: the Colorado Water Conservation Board, the Southwestern Water Conservation District, the Colorado River Water Conservation District, and the Southeastern Colorado Water Conservancy District.

19. To assure project operation in conformity with the operating principle heretofore stated, to provide a means for the collection and interchange of information and to provide a method for the continued study of project operations to the end that, if the stated operating principles may be improved upon, recommendations for changes may be made to the contracting parties, a commission shall be created in an appropriate manner to be composed of one representative of the Southeastern Colorado Water Conservancy District, one representative of the Colorado River Water Conservation District, two representatives of the United States, and one representative of the State of Colorado appointed by the Colorado Water Conservation Board after consultation with the Colorado Game and Fish Commission. The powers of such commission shall be limited to the collection of data, the making of findings of fact, and the suggestion of changes in operating principles.

These operating principles shall be deemed to have amended and take the place of those operating principles signed and executed on April 30, 1959. These operating principles shall be and do constitute a contract between the signatory parties, and shall inure to the benefit of and shall be and remain binding upon said parties, their respective successors and assigns.

Executed as amended at Denver, Colo., the 30th day of December 1959.

COLORADO WATER CONSERVATION BOARD,
STEVE MCNICHOLS,
Chairman, Governor, State of Colorado.

Attest:

FELIX L. SPARKS,
Director and Secretary.

SOUTHEASTERN COLORADO WATER CONSERVANCY DISTRICT,
SELBY YOUNG, *President.*

Attest:

J. G. SHOUN, *Secretary.*

COLORADO RIVER WATER CONSERVATION DISTRICT,
CY T. HANSEN, *President.*

Attest:

PHILIP P. SMITH, *Secretary.*

SOUTHWESTERN WATER CONSERVATION DISTRICT,
IRA E. KELLY, *President.*

Attest:

ARCHIE B. TONER, *Secretary.*

STATE OF CALIFORNIA,
COLORADO RIVER BOARD OF CALIFORNIA,
Los Angeles, May 24, 1960.

HON. WALTER ROGERS,
Chairman, Subcommittee on Irrigation and Reclamation,
Committee on Interior and Insular Affairs,
House of Representatives, Washington, D.C.

DEAR MR. ROGERS: Your announcements of May 2 and May 10 indicate that hearings on bills to authorize the Fryingpan-Arkansas project (H.R. 9229, 9230, 9231, and 9232) will be held by your subcommittee on June 6 and 7.

The Colorado River Board agrees with your observation that this and the other projects involved in your current hearings "involve major problems that need studying." As in the case of the other projects enumerated in your announcements, it is our understanding that the Fryingpan hearings are intended to be exploratory only, with further action not anticipated this year. We also understand that in view of the limited time available, the submission of material for inclusion in the record rather than a personal appearance would be of assistance.

Accordingly, we are submitting herewith certain amendments together with covering explanatory comment. The amendments are keyed to page and line references in H.R. 9229. The amendments concern themselves chiefly with the increasing problems posed by transmountain diversions out of the natural basin of the Colorado River, such as proposed in the Fryingpan project. Thus, amendment No. 1 seeks assurance that approval of the Fryingpan diversion does not constitute a commitment to further exportations; No 2 relates to the "operating principles" agreed to by Colorado interests, which inveigh against further transmountain diversions through this project; No. 5 proposes salinity studies to determine the quality of the water remaining for use; and No. 6 is a proposed limitation on transmountain diversions. No. 3 simply adds statutes which are part of the law of the river and No. 4 includes these statutes, contracts executed under them, and the operating principles, in the litigation provision already in the bill (sec. 6(e)).

Representatives of the Board have met with officials in Colorado interested in the Fryingpan project. We understand those officials are in substantial agreement with most of the amendments proposed. On the basis of these meetings we withdrew certain amendments proposed in previous years in connection with this project. Those proposed herewith are accordingly considered the minimum necessary to full protection for the lower basin.

There is also submitted herewith the official views of the State of California on the proposed Ruedi Dam and Reservoir, transmitted to the Secretary of the Interior on January 11, 1960, which is recommended as an initial unit of the Fryingpan project in lieu of Aspen Dam and Reservoir originally proposed.

It is requested that this letter and the enclosures be included at an appropriate place in the record of the hearings. If questions arise as a result of the hearings we would be pleased to respond to any inquiry you may direct to us. For the present, the Board trusts you will find the attached material of assistance in connection with the subcommittee's study of this project.

Respectfully,

RAYMOND MATTHEW,
Chief Engineer.

AMENDMENTS PROPOSED TO H.R. 9229, TO AUTHORIZE THE FRYINGPAN-ARKANSAS PROJECT

The attached amendments proposed to H.R. 9229 may be explained as follows:

No. 1. Amendment to section 1: This amendment would deny any commitment under the act to approve further transmountain diversions of water. The reports on the project make it clear that even with the project in full operation there will remain a 15-percent shortage of water on the east slope in the area to be served. It should accordingly be very clear that in authorizing this project to assist in handling part of the present shortage on the east slope, Congress is not committing itself to further exportations, either by means of this project or otherwise.

No. 2. Amendments to section 3 (a) and (b): These would incorporate the operating principles as amended and adopted on December 30, 1959, by the interested Colorado agencies. This appears necessary in view of the fact that the version of the principles appearing in the Bureau report of September 1959, had not been finally adopted when the report was issued.

No. 3. Amendments to section 6 (a) and (d): These amendments would insert certain statutes which together with the compacts already mentioned in the bill make up what is frequently referred to as the "law of the river."

No. 4. Amendments to section 6(e): This subsection contains the so-called litigation provision. The amendments proposed would insert the statutes offered for insertion also in section 6 (a) and (d) as part of the law of the river which the Secretary must observe. To these statutes are added the contracts under them to which the Secretary is a party, and the operating principles which will in part govern the project.

No. 5. Proposed new section on quality of water: The impact of transmountain diversions on the quality of the water remaining in the Colorado River system is of serious concern in the lower basin. Testimony by Bureau witnesses on the San Juan-Chama project showed that the Bureau, while believing the impact on quality by that proposed transmountain diversion to be negligible, really did not know what the effect would be. It is important that all transmountain diversions, existing and proposed, be assessed on a continuing basis together with increasing inbasin uses, so that the water users of the remaining water will be informed on quality. The salt content in the lower basin is already high and the facts on this problem are essential to assess future proposed uses. This amendment would require that the Secretary make the necessary investigations and reports.

No. 6. Proposed new section re limitation on transmountain diversions: This proposal is identical with one of the amendments proposed by the Colorado River Board to the Navajo and San Juan-Chama bill. It would utilize language in section 13 (c) and (d) of the Boulder Canyon Project Act to require that all future patents, grants, contracts, concessions, leases, permits, licenses, rights-of-way, or other privileges from the United States necessary or convenient for the use of Colorado River or its tributaries flowing within Colorado shall not be utilized to effect a total diversion out of the basin of more than 20 percent of Colorado's apportionment of beneficial consumptive use under article III(a) of the Upper Colorado River Basin compacts. The constitutional power of Congress to so condition the use of Federal property and privileges seems well established. (See *Ivanhoe Irrigation District* v. *McCracken*, 357 U.S. 275, 294–295 (1958); *Arizona* v. *California*, 283 U.S. 423–462 (1931).)

The Arizona house passed a resolution in April 1955 which, among other things, opposed any projects to export additional water out of the basin. (Hearings on H.R. 412, p. 346.)

The matter was also raised in the Senate hearings on the Fryingpan project in 1955 when the following colloquy occurred:

"Senator ANDERSON. Before you go to your conclusion, Mr. Ely, have you ever given any thought to the possibility that the States of the upper basin might end this question of diversion, cross-mountain diversion project, by some sort of self-limitation act as California did, fixing the total amount?

Mr. ELY. Yes, Mr. Chairman, I have. In my conclusion I have come to that very point.

"Senator ANDERSON. I had thought this matter had come up several times and we are going to have to come to a resolution of it sometime. I wondered if it might not be well to set down some boundaries eventually and say that so much can be delivered." (Hearings on S. 300, p. 223.)

At the time of this colloquy, California offered to attempt negotiations of a limitation on transmountain diversions.

That offer has been renewed repeatedly and still stands.

The estimates of possible transmountain diversions from the upper basin at the time of the Colorado River compact were on the order of 350,000 to 500,000 acre-feet per year maximum. We understand the upper limit is exceeded now in Colorado alone. The projects inventoried in the Bureau's report on the Colorado River in 1947 (H. Doc. 419, 80th Cong., 1st sess.) aggregate on the order of about 3 million acre-feet of transmountain diversions. As Senator Anderson indicated, this problem should be resolved. An effective limitation on the water which may be taken out of the natural basin of the upper river by transmountain diversion should be of real assistance in the quality of water problem.

NO. 1. AMENDMENT TO SECTION 1

On page 2, line 11, after the word "project" insert: "and nothing in this Act shall constitute a commitment, real or implied, to the further exportation of water from the Colorado River system."

NO. 2. AMENDMENTS TO SECTION 3 (a) AND (b)

A. On page 5, line 20, delete "above-mentioned reports" and insert: "September 1959 report of the Bureau of Reclamation entitled 'Ruedi Dam and Reservoir, Colorado,' and reproduced in schedule A to this Act, or any modification thereof which may be accomplished under paragraph 19 of said operating principles."

B. On page 5, line 24, delete "17" and insert "19".

C. On page 5, line 24, after the word "principles" insert a period and delete the remainder of the subsection.

NO. 3. AMENDMENTS TO SECTION 6(A) AND (D)

A. On page 9, line 24, between "River" and "to" insert "System".

B. On page 10, line 2, after the word "Compact" add a comma and insert: "the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, the Colorado River Storage Project Act". (Make same change on p. 11, line 18, after the second "Compact".)

C. On page 10, line 6, change "statute" to "statutes". (Make same change in line 16, and on p. 11, line 21.)

NO. 4. AMENDMENT TO SECTION 6(E)

A. On page 12, line 4, after "Compact," strike "and" and insert: "the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act, the Colorado River Storage Project Act and any contract lawfully entered into by the United States under any of said Acts".

B. On page 12, line 5, following "States," strike everything through the word "Basin" in line 6, and insert: "and the operating principles as incorporated herein".

C. On page 12, line 8, after the word "water" insert "therein".

NO. 5. PROPOSED NEW SECTION ON STUDY OF QUALITY OF WATER

"SEC. —. The Secretary of the Interior is directed to continue his studies of the quality of water of the Colorado River system, to appraise its suitability for municipal, domestic, and industrial use and for irrigation in the various areas in the United States in which it is used or proposed to be used, to estimate the effect of additional developments involving its storage and use (whether heretofore authorized or contemplated for authorization) on the remaining water available for use in the United States, to study all possible means of improving the quality of such water and of alleviating the ill effects thereof, and to report the results of his studies and estimates to the Congress on January 3, 1961, and every two years thereafter."

NO. 6. PROPOSED NEW SECTION RE LIMITATION ON TRANSMOUNTAIN DIVERSIONS

"SEC. —.

"(a) All patents, grants, contracts, concessions, leases, permits, licenses, rights of way, or other privileges from the United States or under its authority, hereafter executed, necessary or convenient for the use of the waters of the Colorado River or its tributaries flowing within Colorado, shall be upon the express condition and with the express covenant that such privilege shall not be utilized to effect either directly or indirectly, the diversion of such waters out of the natural drainage basin of the Colorado River in Colorado beyond an annual quantity which, together with all other existing or authorized diversions out of that basin in Colorado, equals 20 percent of the apportionment of beneficial consumptive use of Colorado River system water to which the State of Colorado may be entitled pursuant to article III(a) of the Upper Colorado River Basin Compact.

"(b) The conditions and covenants referred to herein shall be deemed to run with the land and the right, interest, or privilege therein and water right, and shall attach as a matter of law, whether set out or referred to in the instrument evidencing any such patent, grant, contract, concession, lease, permit, license, right of way, or other privilege from the United States or under its authority, or not, and shall be deemed to be for the benefit of and be available to the States of Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming, and the users of water therein or thereunder, by way of suit, defense, or otherwise, in any litigation respecting the waters of the Colorado River system."

INTERDEPARTMENTAL COMMUNICATION

JANUARY 11, 1960.

To Mr. Harvey O. Banks, Director, Department of Water Resources, Post Office Box 388, Sacramento, Calif.
From: Colorado River Board of California, 909 South Broadway, Los Angeles.
Subject: Review of Federal reports—Ruedi Dam and Reservoir.

Reference is made to a letter, dated October 27, 1959, from Alfred R. Golze, Acting Commissioner of Reclamation, transmitting to you in accordance with section 1 of the Flood Control Act of 1944 the proposed report of the Secretary of the Interior, dated September 1959, on Ruedi Dam and Reservoir, Colo., for review and comment by the State of California. By copy of that letter, Mr. Golze transmitted to this office a copy of the proposed report. Your reply of November 5, 1959, to Mr. Golze stated that the views and recommendations of the State will include the comments of the Colorado River Board.

As directed by the board at its regular meeting on January 6, 1960, the comments of the Colorado River Board of California on the proposed report are submitted herewith, with the request that these comments be incorporated in or transmitted with the report to be submitted for the Governor as the views and recommendations of the State of California.

RAYMOND MATTHEWS, *Chief Engineer.*

JANUARY 11, 1960.

COMMENTS OF COLORADO RIVER BOARD OF CALIFORNIA ON PROPOSED REPORT OF THE SECRETARY OF THE INTERIOR ON RUEDI DAM AND RESERVOIR, COLO., DATED SEPTEMBER 1959

INTRODUCTION

The proposed report of the Secretary of the Interior on Ruedi Dam and Reservoir, Colo., dated September 1959, is a supplement to the report on the Fryingpan-Arkansas transmountain diversion project, which was printed as House Document 187, 83d Congress, 1st session. Ruedi Dam and Reservoir on the Fryingpan River is recommended as an initial feature of the proposed Fryingpan-Arkansas project in lieu of Aspen Dam and Reservoir originally proposed on the Roaring Fork River. The dam contemplated for the Ruedi site would create a reservoir of 100,000 acre-feet capacity, to provide replacement storage for the proposed transmountain diversion and surplus regulatory capacity for use on the western slope of the Rocky Mountains in Colorado. Preliminary cost estimate based on January 1959 prices is $12,831,000.

The main interest of the Colorado River Board of California in the Ruedi Dam and Reservoir lies in the proposal to include this storage unit as an initial feature of the proposed Fryingpan-Arkansas project. One of the operating principles included in the report specifies that the Ruedi Reservoir shall be completed and in operation before any water is diverted to eastern Colorado by means of the Fryingpan-Arkansas project.

FRYINGPAN-ARKANSAS PROJECT

The Fryingpan-Arkansas project is a proposal to create a new export diversion of about 69,000 acre-feet a year average from the Fryingpan River and other tributaries of the Roaring Fork River to the Arkansas River Basin and to increase by about 15,000 acre-feet a year the existing Twin Lakes diversion from the Roaring Forks to the Arkansas. Purpose of the new diversion would be for municipal and industrial water and supplemental irrigation in the Arkansas River Valley.

Bills introduced in the 83d, 84th, and 85th Congresses to authorize construction and operation of the Fryingpan-Arkansas project incorporated by reference a set of operating principles which were printed in House Document 187, and which the report states were intended to reflect agreement on project operations between the eastern slope and the western slope interests in Colorado and to provide protection of rights and interests on both slopes. The principles recognized Aspen Dam and Reservoir of 28,000 acre-feet capacity as an essential feature of the Fryingpan-Arkansas project plan to provide replacement water and water for future use in western Colorado.

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Views of the Colorado River Board and the Department of Public Works of the State of California on the proposed Fryingpan-Arkansas project appear in House Document 187 at pages 152–156 inclusive. Additional presentations of the views of the board were made at committee hearings on H.R. 236 and S. 964 in the 83d Congress, H.R. 412 and S. 300 in the 84th Congress, and S. 60 in the 85th Congress. Representatives of the board stated that the project report is based upon misinterpretation of the Colorado River compact and related documents, that the proposed project operation and the authorizing legislation did not adequately protect California's interests and that serious questions existed as to the engineering and economic feasibility of the project.

Amendments to the proposed authorizing legislation were offered on behalf of California. The board has taken the position that if the amendments deemed essential to the safeguarding of California's rights are rejected the authorization of the project should be denied. Suggested amendments included (1) disclaimer of commitment for transmountain diversions in excess of the quantity contemplated for the Fryingpan-Arkansas project, (2) prohibition against the use of Colorado River System water in any State not a party to the compact, (3) consent of the United States to joinder in suits to enforce compliance with the law of the river or to protect against interference with water rights under State law, (4) provision for comprehensive studies of water quality, and (5) a limitation on total transmountain diversions for the Colorado River Basin by Colorado. The amendments offered were in the main rejected. The bills were passed in the Senate but failed to pass in the House.

Pending in the 86th Congress are substantially identical bills S. 2700 and H.R. 9229, 9230, 9231, and 9232 to authorize construction of the Fryingpan-Arkansas project. Provisions in these bills incorporate by reference a revised set of operating principles contained in the Ruedi report. Certain provisions in the new bills and the revised principles appear to be attempts to meet to some extent the objectives of the amendments previously offered by California. However, the objectives of those amendments still are not fully met.

RUEDI DAM AND RESERVOIR

The proposed Ruedi Dam and Reservoir would have a storage capacity of 100,000 acre-feet instead of the 28,000 acre-feet formerly proposed at the Aspen site. Construction cost is estimated in the report at $12,831,000 at January 1959 price levels. It is proposed in the report that of this amount $7,600,000, equal to the cost previously estimated (at October 1954 price levels) for the Aspen Dam and Reservoir, be assigned to the Fryingpan-Arkansas project on the basis of the claimed need for replacement storage on the western slope to protect existing rights against invasion by the proposed diversion to the eastern slope.

The report assumes that justification of the $7,600,000 is comprehended in the earlier analyses and findings as to the economic justification and financial feasibility of the Fryingpan-Arkansas project. Consideration in the Ruedi report is limited to western slope problems; the chapter on economic and financial analysis deals only with the remaining $5,231,000 cost assigned to the western slope. Of this it is proposed to allocate $1,930,300 or 37 percent to nonreimbursable functions. Proposed allocation to fish and wildlife is $1,757,800 or 34 percent of the total. The remaining $3,300,700 is proposed to be allocated to municipal and industrial water on the assumption that use of the reservoir for such purposes will develop in the future. However, western slope interests anticipate use of the reservoir for irrigation also.

The Ruedi report cannot be characterized as a project planning report such as normally would be presented to the Congress for consideration of project authorization. Studies and estimates underlying the report are admitted to be of reconnaissance grade; further studies are said to be needed to determine the most beneficial and desirable operating plan for the reservoir. It appears from these and other aspects of the report that the plan of development presented in the proposed report may be changed substantially as to design, cost estimates, plan of operation and financial aspects before the plan becomes definite and final.

Operating principles

California agencies have a direct interest in the establishment of a definite limitation on the total amount of transmountain diversions in the upper basin. Section 9(1)(a) of the revised operating principles, read together with the first sentence of section 18, would provide a limitation that transmountain diversions

through the facilities of the Fryingpan-Arkansas project shall never exceed 120,000 acre-feet in any year or a total of 2,352,800 acre-feet in any period of 34 consecutive years. However, the remainder of section 18 and the second sentence of section (6)(b) would vitiate this limitation at the discretion of agencies in Colorado by permitting diversions in excess of the quantities specified in section 9(1)(a).

Section (16) of the operating principles provides that the operation of the project shall be subject to the provisions of the Colorado River Compact and the Upper Colorado River Basin Compact. This section should be broadened by appropriate amendment to any authorizing legislation, to include specific references to the Mexican Water Treaty, the Colorado River Storage Project Act, the Boulder Canyon Project Act, the Boulder Canyon Project Adjustment Act and the contracts for water and power lawfully entered into under provisions of the Boulder Canyon Project Acts.

Need for storage

The Ruedi report contains no clear showing as to the volume of replacement storage needed, if any, on the western slope to permit the proposed diversions to the Arkansas River Basin to be made without encroachment upon existing rights in western Colorado. Indications are that the amount of replacement storage needed is small in relation to the proposed total gross capacity of Ruedi Reservoir. Furthermore, the need for regulatory storage in addition to replacement storage, and the use of such regulatory storage on the western slope is not definitely established by the report. However, it appears that such storage would be found useful for some future development in the Colorado River Basin.

CONCLUSIONS

The proposed report of the Secretary, dated September 1959, on the Ruedi Dam and Reservoir does not appear to be an adequate project planning report for recommendation that the development be authorized. However, the Colorado River Board has no objection to the idea of storage such as proposed at the Ruedi Reservoir site if it will serve a justified useful purpose for development in the Colorado River Basin. The Board has been concerned with the Fryingpan-Arkansas project since its inception and this concern applies with or without the Ruedi Dam and Reservoir now proposed as a substitute for the previously proposed Aspen Dam and Reservoir.

The position of the Colorado River Board with respect to the Fryingpan-Arkansas project is that if legislation to authorize the project is so framed as to assure adequate protection of California's rights and interests by the adoption of suitable amendments deemed essential to that purpose, passage of such legislation would not be opposed.

COLORADO RIVER BOARD OF CALIFORNIA,
By RAYMOND MATTHEW, *Chief Engineer.*

Mr. ROGERS. The Chair recognizes the gentleman from Colorado, Mr. Aspinall.

Mr. ASPINALL. Mr. Sparks, in order to keep this record perfectly clear, the John Martin Reservoir was a flood control project and not an irrigation project; is that right?

Mr. SPARKS. That is correct.

Mr. ASPINALL. And it has no allocation to irrigation, whatsoever, although supposedly it has some benefits to downstream irrigators; is that correct?

Mr. SPARKS. It is controlled by the Arkansas River compact and certain water was allocated to it under that compact.

Mr. ASPINALL. In your statement, on page 2, you make the statement:

> This project contemplates the average annual diversion of about 70,000 acre-feet of water from the Colorado River Basin in the Arkansas Valley.

I do not want to get into the trouble in which we found ourselves yesterday, but this is an additional 70,000 acre-feet of water; is it not?

Mr. SPARKS. That is additional water; that is correct.

Mr. ASPINALL. In your conferences that you have had with the people of California, a great deal of your discussion has centered around the question of the quality of water; has it not?

Mr. SPARKS. It has, Mr. Chairman.

Mr. ASPINALL. And the interested people in California still contend that the diversion of the more or less free-from-mineral water along the divide tends to increase the salt in the water that does get down them; is that correct?

Mr. SPARKS. That is their contention.

Mr. ASPINALL. And the amendments which you have agreed to supposedly settled this matter as far as this legislation is concerned?

Mr. SPARKS. That is correct. While we have great sympathy with their problem, we think their contention is unsound. But we are ready to study their problem at any length.

(Discussion off the record.)

Mr. ASPINALL. I stated, Mr. Sparks, it is the desire of Colorado authorities and interests to conform to the principles of reclamation, whatever they are and that the legislation for this project should be so written. That means payout within the 40- or 50-year period; a 50-year repayment period in this instance because it cannot be figured any less, apparently. Are you willing to make that 50-year period start from the time of final construction of the different facilities of the project?

Mr. SPARKS. We are.

Mr. ASPINALL. I think that is all, Mr. Chairman.

Mr. ROGERS. Before the Chair recognizes other members of the committee, I have a letter here from the Colorado River Board of California together with the amendments referred to by Mr. Sparks, and comments on the Ruedi report, and I think it would be appropriate to have this included in the record immediately after the remarks of Mr. Sparks and preceding the questioning by committee members. Is there objection to that?

If not, it is so ordered.

The Chair will now recognize the gentleman from Colorado, Mr. Chenoweth.

Mr. CHENOWETH. We appreciate your appearance today in support of the Fryingpan-Arkansas project. When I introduced you yesterday, I referred to the fact that you deserved full credit for bringing about the agreement between the east and west slopes and I want to again commend you on the success of that effort. I thought it was an outstanding job and contribution to the water development of Colorado. I am sure your work is appreciated on both the east and west slopes, and by everyone interested in the development of our water resources.

Mr. Sparks, you mention in your statement that the Fryingpan-Arkansas project now has "the highest priority at our State policy level". Do I get the inference that so far as the Colorado State Water Board is concerned, this is the No. 1 project?

Mr. SPARKS. For authorization, Congressman, this is the No. 1 project in the State of Colorado.

Mr. CHENOWETH. That is the position of the Colorado Board?

Mr. SPARKS. That is the position of our State board.

Mr. CHENOWETH. You mentioned that the State of Colorado has spent some $600,000 on this project.

Mr. SPARKS. That includes not only our State agency, but also the southeast agency.

Mr. CHENOWETH. How much has the State of Colorado spent?

Mr. SPARKS. We have spent a little over $200,000 of the funds appropriated to our board.

Mr. CHENOWETH. I believe the Government has spent about a million dollars in the studies of this project.

Mr. SPARKS. I have the exact figures. The total expenditures for this project are considerably in excess of several million dollars from all sources.

Mr. CHENOWETH. I hope this money has been well spent and we will realize the ambitions and dreams of those who have been working so long on the Fryingpan-Arkansas project for so many years. You have certainly been most helpful. I know those interested in the Fryingpan-Arkansas project are very grateful to you for what you have accomplished.

I will not take any further time, Mr. Chairman. Thank you very much.

Mr. SPARKS. Thank you.

Mr. ROGERS. Just one question, Mr. Sparks. What is the difference in the cost of this project as proposed now, as differentiated from the cost in the original bill?

Mr. SPARKS. The principal distinction lies—it is about around $10 million as I recall, the principal distinction being in substitution of the Ruedi Reservoir in place of the Aspen Reservoir, by which the cost was increased from $7,200,000 to approximately $13 million.

Mr. ROGERS. If we do not hurry up and pass this bill, is there any chance of it going up further?

Mr. SPARKS. I do not think there is any question, Mr. Chairman, but that the costs will continue to increase.

Mr. ROGERS. That increase has been due to the change in the overall master plan of the situation, rather than in the cost indexes, has it not?

Mr. SPARKS. At the present time, the increases have taken place primarily because of the change of plans.

Mr. ROGERS. And, as far as you know, this is the end of the change of plans. You are satisfied with this plan as it now stands?

Mr. SPARKS. Mr. Chairman, we will go with this plan to the bitter end. This is it, as far as we are concerned in Colorado.

Mr. ROGERS. Thank you very much, Mr. Sparks.

Mr. SPARKS. Thank you, gentlemen.

Mr. ROGERS. The Chair recognizes Mr. J. Selby Young, president of the Southeastern Colorado Water Conservancy District, accompanied by Mr. Roy Cooper. If you will come forward, you will be recognized.

STATEMENT OF J. SELBY YOUNG, PRESIDENT, SOUTHEASTERN COLORADO WATER CONSERVANCY DISTRICT; ACCOMPANIED BY ROY COOPER AND CHARLES J. BEISE

Mr. YOUNG. Mr. Chairman and members of the committee, my name is J. Selby Young. I reside at 2915 Marilyn Road, Colorado Springs, Colo.

Mr. COOPER. My name is Roy Cooper. I reside in Las Animas, Colo.

Mr. BEISE. I am Charles J. Beise. I am attorney for the Southeastern Colorado Water Conservancy District, Mr. Chairman.

Mr. ROGERS. You may be seated before the committee and you may proceed to testify.

Mr. YOUNG. Mr. Chairman, I am president of the Southeastern Colorado Water Conservancy District, the repayment entity created under Colorado law to contract with the United States for the construction and repayment of the cost of the Fryingpan-Arkansas project.

Our district, a quasi-public corporation having taxing power, was created by decree of the district court, Pueblo County, Pueblo, Colo., in April 1958. The history of the efforts of the people of the Arkansas Valley to procure the Fryingpan-Arkansas project, however, antedate 1958 by precisely 20 years. In 1938, there remained unexpended in a WPA fund available in Colorado, $40,000. As I recall, $60,000 had been expended in investigation of the Colorado-Big Thompson project and the balance, on request being made, was made available to the water users of the Arkansas Valley to assist them in solving their then problems of water shortage.

Twenty-one years ago now, the Bureau of Reclamation office for the investigation of this entire matter was established at Pueblo, Colo. The initial effort of the Government and the water users was toward procuring a survey of arable lands and a survey of existing waters in eastern Colorado. It soon became apparent that introduction of new sources of water would be required to supplement reregulation of valley flows if the needs and requirements of the Arkansas Valley were to be satisfied in any degree.

Simultaneously with the investigations conducted under the auspices of the U.S. Bureau of Reclamation the water users themselves organized to more effectively promote investigation and to aid the Government in devising the best possible project. At first, an informal water users association functioned which was promptly replaced by the Southeastern Colorado Water Development Association. The taxpayers of the valley contributed to this organization $211,000, expended over a period of approximately 15 years to further the investigations conducted.

These funds were used for the paying of the cost of publication of the original project report, the conduct of economic surveys, the making of necessary water filings, the procurement of resolutions from ditch companies regarding the use of water under the Fryingpan-Arkansas project, and many other purposes, all thereof, however, being devoted exclusively to procuring more waters and assisting in the evaluation of the Fryingpan-Arkansas project. It is conservatively estimated that another $100,000 in funds were donated by citizens individually that were not spent under the auspices of the association.

These are men who, have appeared before this committee in three prior sessions of Congress in order to present to the committee the dire plight of the citizens of the valley. This committee will recall that hearings have been held in 1953, 1955, 1957, and the first U.S. official congressional document was Senate Document 103, published in the year 1951.

If I might digress a minute, Mr. Chairman, I would like to honor the people who are now dead who began working with us on the Fry-

ingpan-Arkansas project. There are several who began this work with us and in this 20-year period they can no longer appear here with us any more.

Since 1958, the district has raised by taxation approximately $300,000, all of which is earmarked to further this program. In addition the State of Colorado has expended approximately $200,000 of State funds in the calendar year 1959 in investigating alternate reservoir sites to Aspen Reservoir.

The details of these investigations will be more fully covered by Mr. Felix Sparks, who has recounted the efforts of the State in that behalf. The United States has expended on the investigation of this project approximately a million dollars. In other words, the private citizens and taxpayers and the State of Colorado have collectively spent approximately one-half million dollars to further the Fryingpan-Arkansas project. The United States has spent approximately $1 million.

Mr. ROGERS. Let me ask one question there. I notice you said the State of Colorado has expended approximately $200,000. Your statement shows $100,000.

Mr. YOUNG. Mr. Sparks has previously said $200,000, and we have the late figures from him, Mr. Chairman.

Mr. ROGERS. I wanted the record to show that.

Mr. YOUNG. Thank you, sir.

Obviously, such a sustained program of this magnitude could only exist if the need were genuine and dire. Unfortunately, the average irrigation shortage is approximately 32 percent; that is, in the normal year the average shortage is approximately one-third of a full supply for irrigation purposes alone. The Fryingpan-Arkansas project will not furnish a full supply, but will only reduce this shortage to 16 percent.

The project will provide power for a city without large industrial use of approxiamtely 250,000 population. And all of these benefits are possible by better use and reuse of not only native waters but of imported waters by savings in evaporation, by storing waters that are now applied wastefully in the winter time, by impounding of floods, and by the importing of some 69,000 acre-feet of Colorado River water.

Actually, the imported waters are approximately one-third of the benefits to be derived from project waters created by the Fryingpan-Arkansas. The larger portion thereof will come from capturing flood flows and better use of Arkansas River waters.

The project is economically sound. The power features will be repaid in 42 years and the irrigation features in 51 years after completion. It would provide major flood control benefit; for instance nine-tenths of the 1921 Pueblo flood could be stored in Pueblo Reservoir.

The assessed valuation of property within our district is currently approximately $450 million assessed value. This comprises parts or all of nine counties with a total population of approximately 350,000 people.

It is interesting to note that while this legislation has been under consideration by this committee, the population of El Paso County, which contains the city of Colorado Springs, has almost doubled and the population of the city of Pueblo has increased from 63,685 to

90,040. There are approximately 40 towns with an aggregate population of 50,000 who depend on shallow artesian inadequate wells or surface diversions for an unsatisfactory flow of domestic water. The two big cities involved are Pueblo and Colorado Springs. Colorado Springs in the past few years has spent $18 million of its own in its effort to solve the water supply problem, and its citizens are paying a 300-percent increase in the cost of their water. Even so, by 1966 they will have exhausted their potential growth and will depend almost exclusively on waters to be developed by the Fryingpan-Arkansas project.

This involves for them not only the purchase of water from the Fryingpan-Arkansas project, but the construction of a 40-mile pipeline, pump station, and treatment plant, at a cost of $6½ million. The same is true of Pueblo. Pueblo probably has today a supply of water which, if carefully doled out, will last until 1965. At that time, Pueblo will need to bolster her water supplies very substantially if she is to remain in a growth position.

One of the first steps taken by the adoption of the Southeastern Colorado Water Conservancy District was the adoption of the official program. This, after much discussion, was divided into four parts: No. 1, the procurement of the Fryingpan-Arkansas project; No. 2, the establishment of necessary water rights for such a project; No. 3, the procurement of other waters; No. 4, a better river administration and research program.

This entire program has been pursued diligently, constantly, and with much emphasis by the district ever since its adoption. The district is the same type of entity as the entity used on the Colorado-Big Thompson project. The concept of a district having taxing powers which originated in Colorado has since been adopted in Utah, Nebraska, New Mexico, and other States. The district has great flexibility.

In our particular case, we have some 15 directors of which two represent the cities of Colorado Springs and Pueblo and 13, the counties at large. The faith and support of the citizens of the valley can well be evidenced by the fact that this district was created in the middle of a tax year, i.e., April, and it would not have any revenues from tax funds until the following January; in other words, its first budget had to cover a period of approximately 20 months' time. Until these tax revenues were available, no moneys existed in the treasury to further the project.

The problem was explained to local bankers who, in an effort to solve the problem, agreed to accept the promissory note of the district, without endorsement of any individual, whereby the banks would hazard their loan upon the effective organization of the district. This was no minor matter as the sums loaned were substantial, approximately $40,000, and the very organization of the district and the validity of the decree creating it were then under attack by the Twin Lakes group.

In spite of this, the banks did loan the money and both the district court and, in turn, the Colorado Supreme Court, ruled that the district had been validly organized and was in a position to transact business. Simultaneously with all of this, was waged a fight for the very existence of the Fryingpan-Arkansas project.

On July 1, 1958, it was learned that, without any knowledge on the part of any of the people in eastern Colorado, a decree for Basalt project had been taken in the district court at Glenwood Springs, Colo., which decree, if valid, would capture the entire flow of the Fryingpan River for storage and for the generation of electric energy.

The first step, of course, was to vacate the decree on the grounds that a jurisdiction defect, failure to give notice, existed. Accordingly, a petition was prepared and filed, the matter was heard, and the court entered its order reopening the adjudication proceeding and allowing the district to file its statement of claim. The preparation of this statement required a detailed specification of each point of diversion of waters to be used by the project.

The district then took an assignment of all water rights resulting from filings made by the old Water Development Association of Southeastern Colorado and filed its claim, and the hearing was set for September. It was at about this time that Felix Sparks was appointed to the directorship of the Colorado Water Conservation Board.

On July 15, he and the Governor made a trip to western Colorado to meet with the Colorado River District Board, the board which had procured the Basalt decree. It was Mr. Sparks and the Governor who arranged for the joint meeting on July 30 and it was the Colorado Water Conservation Board, under Colorado's Governor McNichols, that made available approximately $100,000 of State funds with which all possible alternate reservoir sites in western Colorado were investigated to the satisfaction of western Colorado.

While these investigations were under way, it was necessary, in September 1958, for the district to agree to continue the adjudication proceedings to see if some basis of settlement could be evolved. Accordingly, by consent of both districts, our district and the Colorado River District, the court matters were continued until the November term.

During this interim, as I have said, reservoirs on Home State, Roaring Fork, Ash Fork, Ruedi, and other sites were investigated, and by January of 1959, it was known and established that by far the most efficient site that could be constructed at the least possible cost with the greatest benefit was the Ruedi Reservoir.

Again the adjudication proceedings were continued so that the two slopes of Colorado could agree on such modification in the Fryingpan-Arkansas project as would permit Ruedi Reservoir to be substituted for Aspen Reservoir.

This sounds simple, but it involved the necessity of new operating principles, the procuring of a decree consistent with them, and it meant, from a practical standpoint, that for a period of 90 days, commencing in early February 1959 the two districts, under the auspices of the water board, were in almost daily negotiation. The problem was to provide a full supply as required by the Bureau of Reclamation for Fryingpan-Arkansas feasibility and still to reserve a balance which could be used in western Colorado. It is always impossible to please all people on both sides of every controversy. This matter was no exception. By continued negotiation of people of good intent the matters at issue were, however, resolved, and a compromise forced which resulted in formal signing of new operating principles in the Governor's office on April 30, 1959.

Thereafter, it was necessary to proceed to Glenwood Springs, Colo., and put on proof of due diligence and to obtain from that court a conditional decree consistent with the operating principles agreed upon. This was done in May and the court issued its proposed decree in July 1959.

Immediately thereafter, in August, it was determined advisable to have the entire congressional delegation of Colorado accept and agree upon one form of bill to authorize the Fryingpan-Arkansas project. To this end a trip was made to Washington by representatives of both slopes of Colorado, as well as the State water board, and the entire congressional delegation was contacted, bills were drawn, amendments were considered, and as a result all parties in interest and their Representatives and Senators agreed on the form of legislation best suited to accomplish the common objective. That is the form of the bill that is before this committee today.

On top of these matters, it was necessary to obtain from the Bureau of Reclamation a report on the feasibility of Ruedi Reservoir and the practicality of its construction. This report had to be prepared and released to affected States, since they were entitled to the 90-day period to review the report and make comments.

Again, Colorado, through the State water board, came to the rescue and agreed to put up the $25,000 required for the publishing of the report of the Bureau. This report was procured and was released in the fall of 1959. Accordingly, it was not until January 1960 that all of the affected States had been afforded their opportunity to review the Ruedi Reservoir.

In addition to that, meetings were held with various States; for instance, representatives of our district and western Colorado met with representatives of southern California in Los Angeles in January 1960 in an effort to discuss calmly and candidly the proposed report and the problems resulting. This opportunity to explain to the California interests the position of the district was appreciated and we are hopeful that California interests now find that they can, in good faith, support this project which takes such a small amount of water out of the Colorado River drainage.

There remained, of course, all of the hurdles that are necessary in the processing of any reclamation project; that is to say, the report from the Department of the Interior, the letter from the Bureau of the Budget, the scheduling of hearings before congressional and senatorial committees—all of these matters have taken almost constant time and attention of myself, our secretary, our attorney, and several directors having specialized knowledge required to deal with the various problems.

In addition to this, every director is on a working committee of the district and each committee has had numerous meetings every month in an effort to effect better administration and conservation of our own limited water supplies. We have employed the finest type of geologists and engineering services available, we are making a steady, determined effort to conserve and husband our native water resources, and we will continue in these efforts.

What I have tried to give you is a picture of the importance of water and what happens to cities, farmers, and industries when a shortage as severe as that of the Arkansas Valley exists. We have been

discouraged many time. We will continue as long as you will hear from us there is only one solution, and that is procuring the waters which we must have if we are to solve the severe demands imposed upon us.

As president of the district, I am charged with the responsibility to these 350,000 of my fellow citizens of seeing that these waters are secured. I will not fail them and our board will not fail them. We must have your help.

We have, for the first time in Colorado, a united front of all interests in the State and of the entire congressional delegation of the State's official family. We think we have accomplished much in our resolve to solve these matters. We ask your authorization of the Fryingpan-Arkansas project.

Mr. ROGERS. Thank you, Mr. Young.

The Chair will now recognize Mr. Cooper for his statement before the committee members question.

STATEMENT OF ROY D. COOPER, LAS ANIMAS, COLO.

Mr. COOPER. My name is Roy D. Cooper. I reside 6 miles northeast of Las Animas, Colo., on a farm where I was born 48 years ago. I have previously appeared before you and testified at hearings in support of the Fryingpan-Arkansas project.

My last appearance before this subcommittee was in the 1st session of the 84th Congress on H.R. 412. My testimony will be found at page 78 of those hearings and I do not want to take this committee's time in repeating what I said there and what is recorded in readily available form for the committee to read if it wishes.

Today I would like to discuss other matters and to start with you at the head of the Arkansas Valley, briefly mentioning the irrigated land problems and types of agriculture that are found in the Arkansas Valley. The committee must remember we are speaking of a valley over 300 miles in length, which ranges in elevation from approximately 4,000 feet above sea level to grazing at 10,500 feet above sea level.

For instance, at the head of the valley, in Chaffee County, the primary agriculture industry is the growing of mountain meadow hay, alfalfa, barley, wheat, and oats. All of these crops are used in the production of livestock. The livestock is primarily feeder cattle, feeder lambs, purebred breeding stock. The industry is largely dependent on State and Federal forest land for summer grazing with winter feeding being raised on the irrigated lands for the breeding herds during the winter months.

The shortage of irrigation has resulted in excessive grazing on available lands. This area is of glacial moraine, sandy, gravelly, and large quantities of water are diverted over the lands in order to produce crops. Much of the water applied is lost. Possibly 50 percent is lost in ditches before it reaches the land where it is to be applied. In Lake and Chaffee Counties, water district 11, approximately a quarter of a million acre-feet of water are diverted in the average year and this means that possibly 125,000 acre-feet of water is lost.

To minimize this, our district has been diligently pursuing a bentoniting program, encouraging its application and development to avoid these losses. This is but one phase of river regulation which we

are utilizing in an effort to conserve the native waters of the Arkansas Valley.

As we go down the valley immediately below the Royal Gorge, we come into the fruitgrowing area at Canon City. Here the typical farm is an irrigated small farm with extensive quantities of berries and fruit produced. This is a highly specialized form of agriculture which can readily stand a higher water charge than the grazing areas at higher altitudes. Below the fruit area and above the John Martin Dam, a distance of approximately 250 miles, are the large irrigated areas of the Arkansas Valley.

The committee must recall that the Fryingpan-Arkansas project does not intend to bring into production any new previously unirrigated lands and that the project is designed to furnish a supplemental supply only at a cost of $5.40 per acre-foot. When you consider that the average farmer has invested in his crop from $50 to $200 an acre exclusive of his equipment, taxes, and other factors, it is readily understandable that the charge of $5.40 to assure a crop is a very small amount of money.

Generally, in the large areas of irrigated lands which I have mentioned, there are no extensive units of large wealthy farming corporations. The farms are mostly those operated by individuals limited in having any wealth and most being small in size. The 320-acre limitation applicable to a husband and wife would, in most instances cause no major problems. But throughout this entire area, with few exceptions there is no optimum of production from the lands involved. This is due to water shortages.

Individual efforts to solve water shortages have led the growers and farmers to go to pumping from shallow surface wells and waters of an inferior quality which in time will have a bad effect on the land and that have an immediate effect on the river flow. The pump is no permanent solution since it can only be used in the lower reaches of the valley and does not afford relief at higher elevations.

Cattle feeding is a major industry in the lower portion of the valley. Grains and feed grown in the Arkansas Valley through irrigation do not enter into the surplus crop problem which may affect other parts of the country.

These grains and feeds are of such quality that their merit has been recognized by major corporations such as American Stores, Ralston, and Purina, who have built mills in the area for the processing of these crops. The quality of water available for cattle means much in the way of what they gain in the feed lot. Poor water can be a great detriment because of its hardness; good water may mean as much as 10 cents a day gain on cattle. The cost of $5.40 to farmers for good quality water is the cheapest insurance that a farmer can hope to purchase.

I would like to speak briefly of one of the larger ditches of the valley, but before I do, let me say that there are approximately 22 major ditches in the Arkansas Valley irrigating approximately 300,000 acres of land, having a combined length of approximately 800 miles of main canal. From Bessemer Ditch to Las Animas in water districts 14 and 17, these ditches have diverted all the way from approximately 1,100,000 acre-feet in good water years to as little as less than half of that amount in ordinary years. There are great fluctuations.

In years of extreme drought, some ditches divert approximately 25 percent of a normal supply. For instance, the Catlin Canal, one of the major ditches having a good water right, irrigates approximately 18,000 acres of land having decrees as early as 1884. In 1957, it diverted through its headgate 93,000 acre-feet; in 1956, 65,000 acre-feet; and in 1955, 47,000 acre-feet. In other words, in 1955, the Catlin got approximately one-half of a full supply of water.

The Fort Lyon Canal is the largest of the canals and has under it approximately 90,000 irrigated acres. Its diversions have ranged from 369,000 acre-feet in 1957 to 150,000 in 1955. The Highline Canal has approximately 24,000 acres under it and their diversions have ranged from approximately 113,000 acre-feet in 1957 to 16,000 acre-feet in 1955.

While the shortages of irrigation water have varying effects upon the different canal systems, there is a similar general effect upon the farming conditions and methods. Because of these shortages, there is naturally a reduced yield of the crops grown in the area.

Because one of the periods of shortage comes in early spring, the result is a forced delayed planting in many seasons. Such crops as alfalfa and permanent pasture cannot be properly started. This delayed planting also adversely affects crop yields. It often happens, too, that due to prolonged spring water shortages, it becomes necessary for the farmer to substitute a lower income crop for a better one.

As the season progresses and more water becomes available, due to the warmer weather melting the mountain snows, the farmer tends to overirrigate his crops. This overirrigation is encouraged by the thought in the farmer's mind that his water supply may diminish shortly. This malpractice of overirrigating results in leaching away the fertility and also causing waterlogging of the heavier soils. Also, if unused, the water would benefit some junior appropriator, thereby helping balance his supply.

Adequate water would permit a greater diversity of crops because irrigation water would be available at the proper time for the planting of any particular crop. Adequate water supplies would also mean greater yields to the farmers because water would be available during the two critical periods of early spring and midsummer.

Uniquely, too, adequate water supplies would conserve water in our area. When the farmer knows that he will have sufficient water, he will apply it to his land only when and if needed. Under present conditions, the water is applied excessively at certain times in anticipation of later shortages.

The farmers of the area are going to live "chicken one day and feathers the next" until the Fryingpan storage project is available so that these waters can be used as they are needed. This in turn will produce better crops and better farmers. The investment in such a specialty crop as onions can be a minimum of $250 an acre and when this crop can be finished with supplemental water at $5.40 an acre-foot the water available will be of tremendous benefit. The effect of this chronic water shortage has recently been demonstrated by the number of farmer financial failures.

The Denver Post, in a feature article on February 28, 1960, pointed out these recent financial failures. This is but a repetition of the financial failures experienced in the drought of the 1930's and at both

times the greatest number of such failures have been those small farms under ditches with poor water right. The number of failures is in inverse proportion to the amount of water available on the farms and as the water shortages become more severe the number of failures increase. This is true because the cost of farming is almost as great with an insufficient water supply as with an adequate one.

It would have been easily possible for us to greatly lengthen the record in these hearings by bringing resolutions, testimonies, affidavits, from countless ditches, individuals, organizations, municipalities, et cetera, but this has been done before and your records of this subcommittee are replete with such testimony.

Let me conclude then, by saying that the agricultural interests of the Arkansas Valley need the Fryingpan-Arkansas project more today than when the investigation was started in 1938.

Certainly, some areas can derive some relief in part, but the entire area will never achieve the development it should without supplemental water. If any portion of the area grows at the expense of another segment of its economy, the planning for that valley has not been properly handled. It is for this reason that the farmers, municipalities, and ranchers are working together in their effort to make possible the major development which the Fryingpan-Arkansas project promises.

Mr. ROGERS. Thank you, Mr. Cooper.

The Chair recognizes the gentleman from Colorado, Mr. Aspinall.

Mr. ASPINALL. Mr. Young and Mr. Cooper, you have fine statements. Although they are not too full of statistics for us, nevertheless you show us the development and what takes place over the years, especially since we had our last hearings. And you have not been repetitive. That is one of the fine things about these statements.

I notice, Mr. Young, that you make the statement on page 3 of your remarks that the feasibility of the project is economically sound. I suppose you use the words "economically sound" instead of using the words "economically feasible," which we usually use. And, again on page 7, referring to the Ruedi Reservoir, you make a statment that it was necessary to obtain from the Bureau of Reclamation a report on the feasibility of Ruedi Reservoir and the practicalities of its construction.

Now, you understand, do you not, that this project does not have as great a benefit-cost ratio as some of our projects—like the San Luis project of California—but it does have a better benefit-cost ratio than many of the participating projects of the upper Colorado River program. You are aware of that, are you not?

Mr. YOUNG. Yes, sir.

Mr. ASPINALL. You do not mean to say it is your understanding that as of the present time we do have an economic feasibility statement on Ruedi from the Department of Interior, do you?

Mr. YOUNG. There is no complete report, as I understand, Mr. Chairman.

Mr. ASPINALL. That is exactly right, there is no complete report at the present time and it is one of the situations that embarrasses present consideration of this legislation. Apparently we have what we are pleased to call an engineering feasibility report.

Mr. YOUNG. That is right.

Mr. ASPINALL. Apparently, we could get the project into the position where we will have a financial feasibility report in that we can tie it to the Upper Colorado River Basin fund, if we have to. But before we are in position to have the best success on the floor, we should have an economic feasibility report for whatever project or whatever facility is to use the water out of the Ruedi Reservoir. You understand that situation?

Mr. YOUNG. Yes, I do.

Mr. ASPINALL. Could you tell me, Mr. Cooper, the position that the owners of the Twin Lakes operation take at the present time toward this legislation?

Mr. COOPER. You mean in regard to the Fryingpan?

Mr. ASPINALL. Yes.

Mr. COOPER. They are very much behind it.

Mr. ASPINALL. They do not offer any more opposition to it; is that right?

Mr. COOPER. That is right.

Mr. ASPINALL. That is all, Mr. Chairman.

Mr. ROGERS. Mr. Chenoweth?

Mr. CHENOWETH. Mr. Young and Mr. Cooper, I want to commend you on very splendid and informative statements.

Mr. Young, when was the Southeastern Colorado Water Conservancy District organized?

Mr. YOUNG. April 28, 1958.

Mr. CHENOWETH. You were the first president and are still the president?

Mr. YOUNG. Yes, sir.

Mr. CHENOWETH. The board of directors is composed of 15 members?

Mr. YOUNG. Yes, sir.

Mr. CHENOWETH. I believe you meet monthly.

Mr. YOUNG. Yes.

Mr. CHENOWETH. Can you tell us something about the number of acres included, what your income is, and something about your plans for the operation of your district?

Mr. YOUNG. Mr. Chenoweth, the district itself is comprised of about 300,000 acres of land and we have 350,000 people living within the boundaries of the district.

Mr. CHENOWETH. I think the figure is about 280,000 acres.

Mr. YOUNG. 280,000 irrigated acres.

Mr. CHENOWETH. Is that about right?

Mr. YOUNG. Yes, sir.

Mr. CHENOWETH. Is that figure going to fluctuate one way or the other?

Mr. YOUNG. I do not believe so.

Mr. CHENOWETH. That is a firm figure?

Mr. YOUNG. Yes.

Mr. CHENOWETH. Thank you. Go ahead.

Mr. YOUNG. The assessed valuation of the district is somewhere at the present time around $450 million. Our taxing rate as the board adopted is 0.4 of a mill so our income is approximately $170,000. Each year all of this is being put into the Government bonds and securities; all moneys that are not required for the operation of the

district itself. We believe the day will come when the Fryingpan-Arkansas project will be authorized and such moneys will be needed for the purposes that we have so long striven for.

Our subcommittees, Judge, are many. We have committees concerned with research and administration in which we are delving into the inventory of every water source of the entire valley. We are striving to get such research programs as will save and conserve water.

Mr. Cooper mentions the bentonite program. We have many other programs. We are starting a system of gaging in the river. We are advocating that proper measurement and instrumentation be placed all up and down the river, as we see it.

Every effort is being made to utilize the native waters of the river. We feel that we can exist for a while by our own conservation; but, of course, eventually we will need imported waters.

We have an educational committee, for example. We are employing, part time with Colorado State University, a water conservationist to carry on water conservation demonstrations up and down the valley.

Our engineering committee is considering all ways and means that we can provide better instrumentation and measuring and inventorying our resources as we go. Every effort is being made to save the water—every drop of it.

Mr. CHENOWETH. I want to congratulate you and the Board on your successful operations. You are making a most important contribution to the conservation of the water resources of the Arkansas Valley.

As I understand your program, your principal interest is the Fryingpan-Arkansas project.

Mr. YOUNG. That was adopted as the first phase of our first program of our first meeting, Judge, yes, sir.

Mr. CHENOWETH. Would you say the need for the water to be obtained from the project is as desperate today as it was when the project was first conceived?

Mr. YOUNG. It is even more so, Judge, as our population growth is coming. It is our lifeblood, yes, sir.

Mr. CHENOWETH. I was happy to hear you pay tribute to those who first conceived this project and who have now passed on. They deserve great credit. Would you say there is as much interest today in the project in the Arkansas Valley as there was when the project was first proposed?

Mr. YOUNG. There is, and multiplied by hundreds of times; yes, sir.

Mr. CHENOWETH. You have certainly given us some very interesting information, Mr. Young. I want to wish you continued success. I know the district will continue to prosper under your able leadership and the direction of your fine board. I have had the pleasure of attending some of your board meetings and I have been very much impressed with the reports I have heard.

(Discussion off the record.)

Mr. CHENOWETH. What crops do you raise, Mr. Cooper, on your farm?

Mr. COOPER. We raise onions and melons and tomatoes and corn and wheat and beets—very little wheat; you cannot raise much of that.

Our regular crops I would say—the large volume is alfalfa, hay, sugar beets, onions, and melons.

Mr. CHENOWETH. You are a member of the board?

Mr. COOPER. Yes, sir.

Mr. CHENOWETH. What is your interest in this project? What is it going to do for you and the other farmers in your area? How is it going to affect you?

Mr. COOPER. It will increase our water supply about 25 or 30 percent and just make it an entirely different picture there because we are just short of water early in the spring like in the beginning of the planting season when you do not have enough water to get such crops up.

That does not affect surplus crops like onions and beets. Quite a few of them were lost this year due to lack of water. Our rainfall is so low we have to irrigate all stuff up and if you do not have sufficient water to irrigate it up, you just have to pass that crop and what makes it bad is the fact that if you cannot get that crop up, then you have to resort back to maize or corn or something like that and we have too much of that already and you hate to go back to that.

If we had water in the early spring, at the time of planting of these other crops, it would really help us a great deal.

Mr. CHENOWETH. What ditch are you on?

Mr. COOPER. Fort Lyon. It is the largest one.

Mr. CHENOWETH. You call attention in your statement to the wide variance of the amount of water these ditches receive.

Mr. COOPER. Yes.

Mr. CHENOWETH. Sometimes it is less than half of what they need.

Mr. COOPER. Yes. The Fort Lyon. We consider under Fort Lyon approximately 3 acre-feet would be a complete water supply. We vary from 1 foot to about 2.20 now. We have gone as high as 3 feet.

Mr. CHENOWETH. I understand this project would give you an additional 0.6 of an acre-foot.

Mr. COOPER. That is right. That is what it amounts to. We consider that approximately about two irrigations because on the average we figure it will take 3 inches for an irrigation. That would be two complete irrigations. If we had one of them in the early spring and one of them along in late summer—in the spring it might mean getting up the crops and if we had one in the late summer it might mean the whole crop or no crop at all because after you grow it that far, you hate to see it just wither away. Whereas, if you had one more run of water to prolong it until your flood stage did come, you would then be all right.

Mr. ASPINALL. Will the gentleman yield?

Mr. CHENOWETH. Yes.

Mr. ASPINALL. Mr. Cooper, you changed from acre-feet to 3 inches of water. You were changing from acre-feet to cubic inches of water, were you not, in taking it from the headgate?

Mr. COOPER. That is right.

Mr. CHENOWETH. Do you state to the committee now, Mr. Cooper, that the increased crops that would be grown as a result of this project are not going to contribute to the surplus of agricultural commodities?

Mr. COOPER. It will decrease it because the acreage that is now being in maize and corn and the like will go over to onions and melons and cantaloups and beans and such as that because the beans, for instance—the weather is dry there and it is a very adequate climate for beans, but there is a certain time they need water and there is no assurance of any water at any specific time on demand or anything, so you cannot grow them.

The onions—you have a large cost in onions and they are being held down, not planting too many of them because of the fact there is no moisture. If you had enough water, there would be lots more of the vegetables grown because we are close to Denver and Pueblo and in there you know, and transportation is no item any more. You could get rid of it there very adequately.

Mr. CHENOWETH. I appreciate the information you have given the committee, Mr. Cooper. We are happy to have you. We are also happy to have Mr. Beise, who has been the attorney for the district since its organization and has done a fine job.

Mr. ROGERS. The gentleman from Minnesota?

Mr. LANGEN. Mr. Chairman, I thank you.

First, may I compliment the panel for their very excellent statements this morning. I also want to compliment the people in the area and the members of the conservancy district for the extent to which they have contributed not only time and effort, but money in behalf of this project, which evidently is quite significant to the future population there.

I have noticed with some interest, Mr. Young, your reference to the increase in population in the area, which is certainly commendable. There are a good many areas throughout the Nation that I am sure would like to have a comparable experience in increased population. How do you account for this increase under what you have stated as rather severe water conditions and the realization of the problem that has been facing you?

Mr. YOUNG. It is a very pleasant place to live, sir.

Mr. LANGEN. I am sure it is.

Mr. ASPINALL. Will the gentleman yield? I think we need more than that because we have had some Federal installations in there that have meant quite a good bit. Mr. Young was not saying, as I understand his statement, the increase in population came from the agricultural development.

Mr. YOUNG. That is correct. Any implication I might give concerning the beauties of our region and so forth—as a matter of fact, the agricultural population is declining as it is all over the country. Industry, military establishments, and so forth have been probably the main reasons of our population growth in Colorado Springs and Pueblo and the area in general.

It has not been an agricultural growth. It has been more, perhaps, military than any other reason.

Mr. HALEY. Will the gentleman yield?

Mr. LANGEN. I will be glad to yield.

Mr. HALEY. Is what you are saying that the installation of military projects in this general area are bringing about the need for this Fryingpan-Arkansas project? Is that it?

Mr. YOUNG. No, sir, I did not mean to infer it was bringing about a need for it. But as more people come to the area by military instal-

lations or by permanent residence, or by industry, our need for water increases also.

Mr. HALEY. Where are the installations that brought about the need?

Mr. YOUNG. Do you want me to enumerate them, sir?

Mr. HALEY. Yes.

Mr. YOUNG. At Colorado Springs, Colo., we have the Air Force Academy.

Mr. HALEY. Let us stop right there now. Let us stop right there. I very thoroughly questioned the witnesses before this committee about that when they were contemplating the establishment of the Air Force Academy and the presentation was made to the Congress there was ample water to take care of all foreseeable future needs insofar as Colorado Springs and the Air Academy were concerned. I just wanted to say this: that bringing a project in here and trying to tie a military installation on it does not sit very well with me because there were many, many places where the Air Academy could have gone that would have had ample water facilities.

Mr. CHENOWETH. Will the gentleman yield?

Mr. HALEY. In just a second I will. I very thoroughly went into that proposition when you people out there wanted to get the Air Academy. Do not bring this "dead cat" back in here now and say that what you said then is different from the situation now because you did not have the water out there and I questioned very seriously whether you did or not, but I think the record is amply clear that the testimony of the people from Colorado Springs and immediate vicinity was that they had ample water to take care of all of the need of the Academy in Colorado Springs.

Mr. CHENOWETH. Will the gentleman yield?

Mr. HALEY. Yes.

Mr. CHENOWETH. Mr. Young, I hope you will make it crystal clear to my good friend from Florida that the Fryingpan-Arkansas project was under consideration long before there was any mention of the Air Force Academy and there is absolutely no connection whatever between the two. I want you to make that very clear to the gentleman from Florida.

Mr. YOUNG. Yes, indeed. On the bottom of page 3, I would like to point out that Colorado Springs itself has spent $18 million on the development of water apart from that which was allocated to the Air Academy and has no connection with the Fryingpan-Arkansas project whatsoever.

That program—Mr. Nichols can supply any information on that because he is the director of utilities for Colorado Springs and he is present. But the Air Academy—I see no relationship between the Air Academy and the Fryingpan-Arkansas project, at this time.

Mr. HALEY. Will the gentleman yield further?

Mr. LANGEN. I will be glad to yield.

Mr. HALEY. I want to say this: you say some of the shortages—that is your statement, I believe just a little while ago—is because of the Air Academy, which you enumerated as the first installation. Now let us hear some of the rest of them that brought about the need for additional water supply.

Mr. YOUNG. We have Fort Carson which has already been supplied by this $18 million expenditure of Colorado Springs.

Mr. HALEY. How long has it been in operation?

Mr. YOUNG. Since 1942. It is now being reduced, sir, to a very small fraction of its capacity and training capabilities.

Mr. HALEY. I might say I think we ought to reduce all of these military installations where it is putting an additional burden on the community on where you do not have an ample water supply. I am thoroughly in favor of that and putting them where they have water supply.

Mr. YOUNG. We have, through the past actions of the city of Colorado Springs and the Blue River diversion which was started many years ago, on which final completion will be this year, the final tunnel will be made this year. The Blue River project has cost the city $18 million and that water supply will take the city for a few more years and that is it. What I am not clear on is that people require services and require other people to give those services whether they be military or industry or in agricultural communities that are growing, of which I know of none.

Mr. LANGEN. Mr. Young, I am pleased to have that explanation and particularly the reference which states that the rural population has decreased there like it has everywhere else. I notice your statement which implies the population has doubled and then you point to the city of Pueblo which has gone up only 15 percent or less which would seem to imply the rural population has accounted for all the increase. So this information is of value to the knowledge of what has happened to the population in the area.

Now, Mr. Cooper, if I may inquire, I notice that you make specific reference to the agricultural industry at the area, the benefit this irrigation is going to have to the agricultural production. You point specifically to the main industry being that of the production of meadow hay, alfalfa, barley, wheat, and oats.

Mr. COOPER. That is up in the mountain area in the upper part.

Mr. LANGEN. In the upper part?

Mr. COOPER. In the upper part yes, where the forest grazing and like of that is available. That is the reason the livestock industry is up in that end because they use the rangeland there and the feed and hay that they grow there is just simply grown to winter their cattle. Then they go on to the operation or the mountain meadows in the summertime.

Mr. LANGEN. The alfalfa that is produced in the area is irrigated?

Mr. COOPER. Yes.

Mr. LANGEN. What acreage of alfalfa have you got in the 280,000 acres?

Mr. COOPER. Around 100,000 of alfalfa in permanent pastures and the like of that.

Mr. LANGEN. The reason I am asking, in reference to your statement that this does not affect the surplus crops or the other problems we are having in agriculture, I wonder if you realize that throughout the Nation we literally have millions of acres and in my own district, we have hundreds of thousands of acres of alfalfa and wonderful hay on real rich fertile soil that we are now paying the farmer people not to harvest. As a matter of fact, we have penalties if they do cut the hay off of that land. This is certainly true in my district as I know it is in a good many other parts. So there is a relationship between this production and the agricultural productivity.

Mr. COOPER. Alfalfa is not a surplus crop in our area.

Mr. LANGEN. You realize what is being done there is that under the soil bank and the conservation reserve we are setting aside millions of acres on which alfalfa and on which hay crops are presently being raised and are not permitted to be harvested. That in turn, as compared to your area as we see it in our district, tends to have the result of people moving out of the district and we wind up with a reduction in population as compared with the growth you pointed to here a moment ago.

May I inquire further about sugar beets. I notice you mentioned sugar beets were one of the major crops in the area. How many sugar beets are raised in this area?

Mr. COOPER. Between 20,000 and 25,000 acres.

Mr. LANGEN. I would expect that is a pretty good crop for you.

Mr. COOPER. That is a good crop. Our average yield is about 14,000 and we figure with this additional 1 run of water, we could probably get it up to 20, which would be quite an increase over that large area.

Mr. LANGEN. Again, in that field, and in the area where I come from and just this last year we had applications from 852 farmers requesting to plant something over 50,000 acres. These same people have been making those requests I think every year, as long as I can remember, certainly, for the last 20 years. They are asking no Federal funds, they are asking for no water, they are asking for nothing, just the mere request, "Would you not please let us plant some sugar beets?" Just that one simple request. So, there is a relationship between the agricultural products here and those throughout the rest of the Nation.

Mr. COOPER. But we would not be able to grow any more of them. In the case of the sugar beets, we will just simply increase our tonnage.

Mr. LANGEN. Of course, the tonnage there enters into the whole scene; does it not? You know as well as I do the allotments in turn that are made, as tonnage goes up, are based on our production. Is that not true?

Mr. COOPER. But your allotment is not based on your tonnage.

Mr. LANGEN. True.

Mr. COOPER. You are not allotted tonnage, but acreage.

Mr. LANGEN. Eventually, they are converted to acreage. You have seen the reduction in some of those allotments as we have seen in our area, I am sure.

I will say this: I hope this is not interpreted as being a criticism against this problem because I can fully appreciate the problems you are having and can realize the significance of water to you. I do feel, however, in view of the number of projects of this kind I have seen come before the committee—and there are more of them coming—that these are factors that ought to be considered in the overall consideration of the expenditure of Government dollars, and that in so many instances, which is true with the soil bank and the dollars that are expended there, that they do play a part in not only the national economy, but in the agricultural economy as well.

You made reference to a diversion and there might be a diversion from some of these crops into something else. To what degree do you expect that will happen, percentagewise?

Mr. COOPER. Twenty-five percent. There will be a 25-percent increase in onions and melons and pickles, and tomatoes and such; what we call diversified crops.

Mr. LANGEN. I bring this up with some degree of hesitancy, but it was not too long ago that I had one of the prominent farmers in my district call on me here in Washington telling me at the present time he had some eight or nine carloads of onions he could not find anywhere to sell. I think eventually they were shipped down south somewhere. But, again, we see the relationship of one area of the country to another.

You mentioned the market for all of these. Do you have suitable market for them?

Mr. COOPER. Yes. We got rid of all of our onions last year and demand for more. Maybe it is because we are closer at this particular time and you know our onions go south and it is closer south from our country than it is from Minnesota.

Mr. LANGEN. There is not any doubt about that. I do want to point out this, however, that there are a good many onions, but onions are not one of our big crops, it is not a major item with us. There is a good volume of them that go south as well depending on the season and the conditions in various parts of the country. What about the wheat and the oats? Is there large volume?

Mr. COOPER. It has gone down quite a bit. There is not as much wheat as there is oats. I mean as much oats as there is wheat. I would say 2,000 acres and a big share of that is in small quantities up in the higher elevation where they just grow it for feed. That will not increase either because most of it is used as a nurse crop for alfalfa.

Mr. LANGEN. I would expect, speaking as one farmer to another, if there is a diversion it might well come in the field of wheat and oats, rather than in the field of alfalfa and something else.

Mr. COOPER. You mean more of it?

Mr. LANGEN. If there were to be a diversion if as you mentioned from onions and vegetables.

Mr. COOPER. It would be the lowering of that into onions and melons and vegetables. That would be less.

Mr. LANGEN. To further that, just one point more.

To what degree do you anticipate that this project might be able to increase the total agricultural product of the 280,000 acres?

Mr. COOPER. The survey that was taken showed that there would be an increase, not in the livestock area at all, but just in the crop of somewhere between five and six million yearly.

Mr. LANGEN. Some $5 or $6 million?

Mr. COOPER. That is right, gross dollars.

Mr. LANGEN. And what percentage increase is that over what the income is now?

Mr. COOPER. About 25 percent.

Mr. LANGEN. About 25 percent?

Mr. COOPER. That is right.

Mr. LANGEN. So we then do find a situation in which here is an area that by means of expending these governmental dollars we are then increasing the agricultural productivity by about 25 percent.

Mr. COOPER. That is right.

Mr. LANGEN. While in other areas of the Nation, such as ours, we find it necessary to reduce and have had the experience of that reduc-

tion over the past several years because in all of these instances where we are talking about wheat or oats or so on, we are told what you have got to do is raise a little bit less and sell them for a little lower price and then everything is going to be all right.

As a further result of that, we have all of these hundreds of thousands of acres lying idle and telling the people now you must not harvest anything off of those acres.

Mr. COOPER. But this increase in this particular case here comes from the fact that diversification or changing over to a higher income crop.

Mr. LANGEN. I appreciate that is true. By the same token, you are going to increase the production of alfalfa, you are going to increase the production of sugar beets, and you are going to increase the production of any number of crops that are in direct relationship to these other areas.

Mr. COOPER. I think increased tonnage in alfalfa and grain and all of that will be just about the same because you will lower the acreage and increase bushels or tonnage or whatever it is until it comes out with just about the same figure it is now, tonnagewise, in hay and grain and all of that.

Mr. LANGEN. I shall not belabor the point any further.

Mr. COOPER. Like back to the hay or grain, a hundred dollars an acre or any grain crop anything like that is a pretty good percentage income. Whereas, the average in onions is around $500; in melons it is $200; in beans it is $200; and tomatoes is $200 to $300. The reason that will make more diversification, too, is the fact there is a large amount of import labor coming in there now. You have to have it for the sugar beets. The chances are, as you know, since you are from an agricultural area, that you have to give them work 75 percent of the time, and they have figured this out and the farmers are working out a schedule on crops whereby they have something that is being worked at or harvested at different intervals of the season so that they can bring the labor in there and keep them busy the entire season. Like onions come early and beets are kind of early and the melons are harvested along in the middle of that season. So, you have time there to keep a certain number of men busy at all times.

Mr. LANGEN. When we get into the matter of mechanics, labor, of course we get into an entirely different field and I shall not belabor the point.

Mr. COOPER. It is just a plan, I mean.

Mr. LANGEN. Other than to say this: That with the present agricultural problem that is facing the Nation and with the terrific amount of criticism and complaints that we are getting from citizens all throughout the Nation about the volume of dollars that we are spending for the purpose of subsidizing agriculture not to produce, it seems logical to me we ought to at least raise the question when we get into an endeavor in which we are trying to increase the production. I think it has long been understood that the entire agricultural unit of the Nation is such that at the present time it has the potential of producing more than we can possibly use domestically, and that we can possibly export even with large subsidies going into the export field.

It is for that reason that I felt as a matter of record these things ought to be brought to light and that you ought to have the oppor-

tunity of explaining the ways and means in which this project would affect agriculture in your patricular area.

Mr. CHENOWETH. Will the gentleman yield?

Mr. LANGEN. Yes.

Mr. CHENOWETH. I want to say I appreciate the gentleman's interest in this project and I hope he has obtained the information on the agricultural situation that he wanted. If there is further information we can get, we will be most happy to do so. We have no desire to compete with my colleague's district in Minnesota. I do not think there will be any between the two.

Mr. LANGEN. I thank the gentleman and I believe I have a request from yesterday to furnish some figures.

Mr. ROGERS. Mr. Haley?

Mr. HALEY. Mr. Cooper, you say you live on the farm on which you were born. How large a farm is that?

Mr. COOPER. The farm that I live on is 80 acres.

Mr. HALEY. How much land do you farm?

Mr. COOPER. 1,000.

Mr. HALEY. 1,000 acres?

Mr. COOPER. That is right.

Mr. HALEY. Getting back to your statement about the sugar beets; what percentage of your crop is in sugar beets?

Mr. COOPER. I have an allotment of 125 acres.

Mr. HALEY. So that 12½ percent of your operation is sugar beets?

Mr. COOPER. Right.

Mr. HALEY. What about corn?

Mr. COOPER. I have about 70 acres.

Mr. HALEY. So that is 7 percent of your operation.

Mr. COOPER. Yes.

Mr. HALEY. What other crops do you grow that are in surplus?

Mr. COOPER. Maize, or sorghum.

Mr. HALEY. How much percentagewise?

Mr. COOPER. I have about 200 acres planted at the present time.

Mr. HALEY. That is 20 percent. Anything else?

Mr. COOPER. In the surplus?

Mr. HALEY. Yes.

Mr. COOPER. I have the regular 15-acre wheat.

Mr. HALEY. That is 1½ percent.

Mr. COOPER. That is all the grain.

Mr. HALEY. 41 percent of all your farming operation is growing crops that are now in surplus; is that correct?

Mr. COOPER. Well, I never figured it up.

Mr. HALEY. That is the figures you have given me here. I just want to call that to your attention.

What is going to be the cost of the project as you understand it?

Mr. COOPER. Around $175 million.

Mr. HALEY. $175 million. Of course, you know that——

Mr. CHENOWETH. Will the gentleman yield?

Mr. HALEY. Yes.

Mr. CHENOWETH. The figure is about $169 million.

Mr. HALEY. All right. Let us say for an even figure, say $160 million. Of course, the gentleman from Colorado is well aware of the fact that every time these projects are brought here before the Con-

gress and they say it will cost $160 million it ends up with $200 million or $300 million, or something like that. Let us take the cost of this project at $160 million.

You realize, Mr. Cooper, that the Federal Government has to go out and borrow the money at 5 per cent, do you not?

Mr. COOPER. Yes, but that is all we are doing—just borrowing it from you.

Mr. HALEY. I know that. Are you paying 5 percent?

Mr. COOPER. Am I paying 5 percent?

Mr. HALEY. Yes.

Mr. COOPER. I am paying 6.

Mr. HALEY. What are you going to pay the Government on this?

Mr. COOPER. I would not know.

Mr. HALEY. You do not know what you are going to pay the Government? 2, 3, or 4 percent.

Mr. COOPER. That is a kind of unsettled question right at the present time, is it not?

Mr. HALEY. As to what you are going to pay?

Mr. COOPER. Yes, the interest.

Mr. HALEY. If I had my way about it, you would pay the interest it costs the Treasury to borrow this money. That is what you ought to be paying, otherwise you are asking the people of the other parts of the country to subsidize you out there. Is that not correct? To pay the difference between what the Federal Government pays and you pay.

Mr. COOPER. The Government is paying 5 percent for this money?

Mr. HALEY. That is my understanding. Do you know of any loans that have been made recently by the Federal Government they have not paid 5 percent?

Mr. COOPER. I do not know a thing about that.

Mr. HALEY. On that base of $160 million, the interest alone per year would run approximately $8 million, and you estimate that if this project were built then it would increase the productivity of the lands in question about 25 percent and said that would be about $5 million. Is that right?

Mr. COOPER. About 5 or 6 million.

Mr. HALEY. Let us use $6 million. Then where is the other $2 million or $3 million going to come from?

Mr. COOPER. There is only about 25 percent or I do not know what percent is allocated to agriculture.

Mr. HALEY. Well, Mr. Cooper, you all come in here and first you want to get off on the national defense track, then you want to get off on to the agricultural production track, and yet just on the basis of what you stated here, I do not see much justification. Do you people out there in the West realize we have in this country now approximately 40 million acres of land that we are paying people not to produce crops on or land that could be put into cultivation, without the expenditure of one thin dime as far as the Federal Government?

Mr. COOPER. I realize that.

Mr. HALEY. Then what is your justification for coming in here and asking for a loan of $160 million or $170 million and what will probably be better than $200 million before we get through?

Mr. CHENOWETH. Will the gentleman yield?

Mr. HALEY. Yes.

Mr. CHENOWETH. I know the gentleman from Florida wants to be absolutely fair in this matter. I am sure he does not want to intentionally mislead Mr. Cooper. I am sure the gentleman from Florida realizes with the exception of some $20 million, the entire cost of the project will be paid back to the Government and all with interest, with the exception of $67 million which, under reclamation law, is interest free. I am certain the gentleman from Florida would not want Mr. Cooper to state that he feels that agricultural land now in the Arkansas Valley should be withdrawn entirely from cultivation and production. The time may soon come, I will say to the gentleman from Florida, when we may be happy we have some of this production. We may desperately need this sugar if the Cuban picture gets worse. There may be some of these other commodities which we will also need.

The fact these other parts of the country have land which is not in production at this time should not be a factor in the consideration of this project. I think we ought to make it possible for those people who are now producing and have this rich land that is capable of production with the necessary water, to continue to produce what they can. It will not affect the agricultural surplus to any appreciable extent.

You mentioned the national defense angle. I am sure Mr. Cooper did not mean to imply this project is connected with national defense. This project was conceived some 20 or 25 years ago as a straight irrigation and reclamation project to provide supplemental water for this land.

Mr. HALEY. I might say to the distinguished gentleman from Colorado, I realize this project out there is very dear to his heart. What the gentleman from Florida is trying to determine here, maybe it is not the best way to approach it, but I just do not want to blindly take the figures here that somebody comes up here and says this is it. I am trying to establish the economic justification of this project and according to what the witnesses have said this morning, I do not see very much justification for it.

I might say this to the gentleman from Colorado: I think we can solve your sugar beet problem very well if the gentleman would come along with the gentleman from Florida and let us cut off the subsidies of $140 million or $150 million that we are taking away from the taxpayers or the people who consume sugar in America, and take it away from that juvenile delinquent who seems to be proud of the fact that he can grow a beard down here in Cuba.

If we had sense enough to take that sugar quota away from him and let him send it to Khrushchev or any other place and put it on the world market, we could probably get you some additional sugar tonnage. I will be glad to do that.

Mr. CHENOWETH. I think the cane sugar industry and the beet sugar industry are working hand in hand on this situation. They are pretty well united on this matter. When the proper time comes we will certainly be happy to join with you on any such effort that may be made.

Mr. HALEY. I might say to the gentleman that in Florida we have thousands and thousands of acres of land that people who know tell me are some of the finest sugar-producing lands in the world. Yet you allocate us down there, you say you can just grow about 20 percent

of what you can really produce, we are going to keep the lid on you here so we can pay the subsidy somewhat to the people who are growing sugar beets. If you would just turn us loose in Florida, we will produce just about all the sugar you need in this country.

Mr. CHENOWETH. Will the gentleman yield once more? I recall one of the first controversies when I came to Washington in January 1941 was the plan of the Department of Agriculture to further restrict sugar beet acreage. Shortly after that we became involved in World War II and we were certainly very happy to have the sugar which we were producing in the beet sugar States and the only regret was we did not have more.

I say to the gentleman from Florida, we are going to need all of this sugar. Sugar is not a surplus crop right now. We also have additional acreage in Colorado we could put into sugar. I want to remind the gentleman in this bill we are not bringing any additional acreage into production. All we are asking here is for supplemental water for the production of these crops on the acres which Mr. Cooper and other farmers in that area have been farming for many, many years. He is living on the farm where he was born. I am sure there are many similar cases. These farmers, like Mr. Cooper, have been farming in the Arkansas Valley for a long time.

Mr. HALEY. You just want to have more water so you can produce more tonnage per acre. I understand that; that is all right.

Now, Mr. Cooper, in your statement on page 2, you say:

> Individual efforts to solve water shortages have led the growers and farmers to go to pumping, from shallow surface wells, waters of inferior quality which in time will have a bad effect on the land and that have an immediate effect on the river flow.

Are you now pumping from shallow wells?

Mr. COOPER. There are some; yes.

Mr. HALEY. I did not ask you that. Are you pumping from shallow wells?

Mr. COOPER. I have one.

Mr. HALEY. That is not very good water?

Mr. COOPER. No; it is not.

Mr. HALEY. The building of this project would solve that situation and, of course, would be much cheaper than you are paying to pump the water; is that right?

Mr. COOPER. No; it would cost about the same. The cost of pumping that water per acre-foot has been figured and the cost is just about the same per acre-foot as this water is supposed to cost in the project.

Mr. HALEY. Mr. Cooper, where they propose to cut this transmountain diversion, what is the altitude of that land generally?

Mr. COOPER. 10,000 or 11,000 feet.

Mr. HALEY. You talk about the low part of the valley and the high part of the valley. What is the average, roughly, of the elevation of the low part of the valley?

Mr. COOPER. About 4,000 feet.

Mr. HALEY. Yes. What about the upper part of it?

Mr. COOPER. About 10,000 feet.

Mr. HALEY. At the elevation of 10,000 feet, approximately, how many months do you have to grow crops out there?

Mr. COOPER. About 3 months.

Mr. HALEY. About three?

Mr. COOPER. Yes.

Mr. HALEY. It gets pretty chilly out there; does it not?

Mr. COOPER. Yes; it does.

Mr. HALEY. Are you going to run this water through open canals or going to cover it over?

Mr. COOPER. Some of it is open and some of it is closed.

Mr. HALEY. How many months then would the open ditches and canals be frozen over in a year?

Mr. COOPER. I do not think they would be frozen over over 3 months. That is in the upper part.

Mr. HALEY. The lower part probably would not freeze over much; would it?

Mr. COOPER. Not very much; no.

Mr. HALEY. But the water has to flow downhill where you have these ditches or canals.

Mr. COOPER. It comes out of the Pueblo Reservoir. It is brought over and stored in the reservoir and released out of that. When water is being released in those canals the temperature is not so low.

Mr. HALEY. I think that is all, Mr. Chairman.

Mr. HOSMER. Will the gentleman yield?

Mr. HALEY. Yes.

Mr. HOSMER. Do you think it would be fair to deteriorate the quality of some other farmers' water in order to improve your own irrigating water?

Mr. COOPER. What do you have reference to?

Mr. HOSMER. I asked you a question. Do you think it would be fair to deteriorate the quality of some other farmers' water in order to improve the quality of your own water?

Mr. COOPER. No.

Mr. HOSMER. Thank you.

Mr. HALEY. I am through.

Mr. ROGERS. Mr. Cooper, there are one or two questions I would like to ask about the sugar beet situation.

Do I understand you to say you would increase the output from around 15 tons to 20 tons per acre?

Mr. COOPER. Yes.

Mr. ROGERS. And you have around 20,000 acres allotted?

Mr. COOPER. Yes.

Mr. ROGERS. Does all of the production of allocated acres go to the sugar mills that are nearby?

Mr. COOPER. Yes, sir.

Mr. ROGERS. What you have to do in this situation—after you get your acreage allocation that is not the end of your job; you have to go and contract to the quota holders who operate the mills; do you not?

Mr. COOPER. The mill contractors contract the acreage; yes, sir.

Mr. ROGERS. In other words, you have no assurance they are going to make a deal with you to buy your sugar beets.

Mr. COOPER. Yes; they have a contract.

Mr. ROGERS. They do have a contract, but you have to make that contract with them separately and apart from your acreage allocation.

Mr. COOPER. No, not separately.

Mr. ROGERS. If you get the acreage allocation from the Department of Agriculture——

Mr. COOPER. You, in turn, then make a contract to them, and they accept that exact acreage.

Mr. ROGERS. What I am talking about is this: That when you do that if that is the case, then you increase your tonnage from 15 to 20 tons per acre, you are going to knock the people out in other areas that are presently growing sugar beets under allocation from selling that to those sugar mills, are you not?

Mr. COOPER. At the present time, we have years that it fluctuates from 12 to 17 tons and it has not had any effect yet.

Mr. ROGERS. You mean your production does?

Mr. COOPER. Yes.

Mr. ROGERS. The reason for that is this: That the sugar mills have been able to buy that difference where it was not up to your top production. They have been able to buy that from other sources, have they not?

Mr. COOPER. I suppose, I do not know.

Mr. ROGERS. The thing I am getting at is this, and I am very sincere about it. I represent a district that can produce plenty of sugar beets and the State of Texas has 1,900 acres allotted to it for sugar beet production, and we can produce all the sugar beets anyone needs in the Panhandle of Texas. It is a very serious situation with us. What is your income per acre on sugar beets—about $125?

Mr. COOPER. No, it is about $200.

Mr. ROGERS. I was wondering if you thought they would change over into beans or melons or things of that kind in preference to sugar beets where you could release some of that acreage in sugar beets.

Mr. COOPER. I presume they would. If they had adequate water they would. But you are talking here about why change over because you will just go into something else somebody else has got too much of.

Mr. ROGERS. As I understand you, there was no surplus production in melons and beans and things of that kind.

Mr. COOPER. Beans, is that not supported?

Mr. ROGERS. I do not know. We do not grow any beans in my area. As I understood your reply to Mr. Langen, that this project would not produce any crops that were presently in surplus except your wheat and your barley and your grain sorghum.

Mr. COOPER. Yes.

Mr. ROGERS. In other words, beans themselves—are you talking about soybeans?

Mr. COOPER. No.

Mr. ROGERS. I did not think you were because soybeans are. I did not think there was any program on the other type of beans.

Mr. COOPER. No.

Mr. ROGERS. The situation here confronting us, to be very realistic, Mr. Cooper, is simply this: In my district we raise a great deal of grain sorghums and, of course, we would like to get a higher price or would like to get more acreage to get a better market for it, but the sugar beet situation is a rather difficult one because of the low acreage we have.

We just do not feel it is fair that the sugar beet acreage be spread out all over the country and Texas have 1,900 acres and we

are only producing 55 percent of our sugar domestically anyway, and giving these sugar allocations and quotas to the other countries and especially Cuba, of course, makes it a very cantankerous situation.

I have introduced some legislation that would take the inventory each year insofar as domestic sugar requirements are concerned and allocate that acreage to the sugar beet producers in this country rather than divide it 45 and 55 between this country and the foreign countries presently producing our sugar. I think it would answer a lot of questions of the sugar beet people. I do want to point up the proposition. It is a very difficult situation and those of us who live in districts that have this problem are justified in the matters, too.

The wheat you grow up there is Soft wheat or is it Hard Winter wheat?

Mr. COOPER. Soft.

Mr. ROGERS. What is your average production per acre?

Mr. COOPER. Thirty-five or forty.

Mr. ROGERS. What is the wheat used for mainly?

Mr. COOPER. Flour, milled.

Mr. ROGERS. You say you think the people would shift out of that into the other more lucrative crops?

Mr. COOPER. I do not think in the wheat case there would be very much shifting because they have an allotment there, most of the farmers have a small allotment and they would stay with that.

Mr. ROGERS. So many of you are using the 15 acres you are talking about.

Mr. COOPER. That is right.

Mr. ROGERS. With relation to the point Mr. Haley was making with regard to your repayment of this project and the interest costs, your annual net revenue on this project, as presently projected, as I understand it, is some $3,800,000, and you have a $85 million payback that requires interest to be paid on it. Now, $85 million bearing 3-percent interest, which is some $2½ million a year and your income is only $3,800,000, it is going to take a long, long time to pay that principal, is it not?

Mr. COOPER. As I said before, it is not all charged to agriculture.

Mr. ROGERS. I understand it is not all charged to agriculture. Of course, if it was it would be a very difficult thing to justify, very difficult.

Mr. CHENOWETH. Will the gentleman yield?

Mr. ROGERS. Yes.

Mr. CHENOWETH. Mr. Sparks, who represents the Colorado Conservation Board, said they would repay the costs in 50 years.

Mr. ROGERS. That is the thing that was worrying me, how it was going to be done in 50 years where you have about close to $150 million to repay and you have only got about $1,300,000 a year to pay it with.

Mr. CHENOWETH. There will be power revenues after the allocation to power has been repaid. Those revenues will then apply on the irrigation payment. Municipal water pays out well within the 50-year period.

Mr. COOPER. I would like to ask you, back to the sugar beet deal, that is a new crop in your area, is it not?

Mr. ROGERS. Oh, yes. Yes, it is as a matter of fact——

Mr. COOPER. We have been growing them for 50 years there.

Mr. ROGERS. I understand that, Mr. Cooper, but the old crops we had been growing for 50 years they took away from us, too. So, we are just left between the devil and the deep blue sea. I mean we find some difficulty in understanding how you can take history and apply it one way to one group of people and apply it another way to another group of people and that is the problem in our district. We have discussed it with the sugar beet people in the Department, but the fact of the matter is simply this: the problem remains not only in my State, but in many other States, as Mr. Langen pointed out.

There is a tremendous demand for sugar beet acreage. I am sure you have discussed it with the sugar meet people in the Department of Agriculture. There is a problem to work out. I do not want to argue with anyone about it, what I want to do is to try to get this thing worked out so everybody in the United States can make a living and stay where they are and stop the trend of pushing people into the metropolitan areas because of the troubles that are going to multiply, and multiply, and multiply. Are there other questions?

Mr. HOSMER. Are there any surplus grain storage elevators in this general area?

Mr. COOPER. Very few. I do not know just how many, but very few.

Mr. HOSMER. They have a substantially fair capacity, have they not?

Mr. COOPER. They have what?

Mr. HOSMER. Pretty good capacity?

Mr. COOPER. The storage?

Mr. HOSMER. Yes.

Mr. COOPER. No; most of them are just small, three or four in a place.

Mr. HOSMER. But there is already Government surplus wheat in storage?

Mr. COOPER. I think so; yes.

Mr. HOSMER. That is all.

Mr. ROGERS. If there are no other questions, the subcommittee will stand adjourned until 1:30 this afternoon.

(Whereupon, at 11:50 a.m., the subcommittee was recessed, to reconvene at 1:30 p.m., the same day.)

AFTERNOON SESSION

Mr. ASPINALL. The Subcommittee on Irrigation and Reclamation will resume its hearing on consideration of H.R. 9229, and companion bills.

The first witness this afternoon will me Mr. L. R. Patterson, vice president, electric operations, of the Public Service Co. of Colorado and the Southern Colorado Power Co.

STATEMENT OF L. R. PATTERSON, VICE PRESIDENT, ELECTRIC OPERATIONS, PUBLIC SERVICE CO. OF COLORADO, APPEARING ON BEHALF OF PUBLIC SERVICE CO. OF COLORADO AND SOUTHERN COLORADO POWER CO.

Mr. PATTERSON. Thank you very much, Congressman Aspinall, for giving us this opportunity to put in a statement.

My name is, as previously given, L. R. Patterson, vice president, Public Service Co. of Colorado and Denver, and the statement I will make is on behalf of the Public Service Co. of Colorado and the Southern Colorado Power Co. We last put in a complete statement in connection with this project in February 1955. Since that time there have been developments on both the system of the Public Service Co. and the Southern Colorado Power Co. that made us feel it would be worth while to put in this supplemental statement to bring the record up to date.

Both Public Service Co. of Colorado and Southern Colorado Power Co. have appeared in earlier hearings before the committee during the 83d, 84th, and 85th Congresses relative to the Fryingpan-Arkansas project and have submitted to the committee a certain proposal in connection therewith. This proposal is now a part of the files of this committee and is entitled "A Proposal to the Interior and Insular Affairs Committee in Connection With Fryingpan-Arkansas Project, Colorado, by Public Service Co. of Colorado, Denver, Colo., and Southern Colorado Power Co., Pueblo, Colo., Revised February 1955." The attention of the committee is respectfully directed to said proposal incorporated herein by reference, and the statement presented herewith is designed to be supplementary thereto.

The companies would first like to reiterate and reaffirm their proposal heretofore made to the committee in connection with the Fryingpan-Arkansas project, to which the attention of the committee has been directed. The companies earnestly and sincerely believe that said proposal offers substantial benefits not only to the Federal Government and the Federal taxpayers, but also to the State and local governments affected and their taxpayers, to the Arkansas Valley water users and to all project power users including customers of the companies, all as set forth in said proposal.

Since the preparation of said proposal and the presentation thereof to the committee, certain developments have taken place within the service territories of the companies in relation to said proposal and it is the desire of the companies to advise the committee of such developments herewith.

Since December 31, 1954, the two companies have actively carried forward the construction of additional electric generating, transmission, and distribution facilities to keep ahead of the load growth requirements of their respective service areas. During the 5 years 1955 through 1959, Public Service Co. of Colorado added 366,500 kilowatts of steam electric generating capability, bringing its total generating capacity up to 834,550 kilowatts, or an increase of 77.7 percent since the end of the year 1954. In addition, during this period, the company built 259 miles of high voltage transmission lines and added 56,177 electric customers. At December 31, 1959, Public Service Co. of Colorado was serving 313,743 electric customers,

an increase of 21.8 percent over the number served on December 31, 1954. During the period, the company made an additional 115-kilovolt interconnection between the company's system and that of the Bureau of Reclamation near Erie, Colo., east of Boulder, Colo., and north of the city of Denver, and the company now has a present total of 21 points of "wheeling" delivery to REA systems throughout the State of Colorado.

Southern Colorado Power Co., since the yearend 1954, has increased its steam electric generating capability by 30,000 kilowatts by the installation of new generating units at its Canon City plant, bringing its total generating capacity at December 31, 1959, up to 90,000 kilowatts, or an increase of 50.0 percent over the end of the year 1954. At the end of the year 1959, Southern Colorado Power Co. was serving 48,172 electric customers, an increase of 11.1 percent over the number of electric customers served at December 31, 1954.

At the present time Public Service Co. of Colorado has under construction and will place in operation in 1962 the third unit, 150,000 kilowatts, at its Cherokee plant, north of the city of Denver, and the second unit, 44,000 kilowatts, at its Cameo plant, northeast of Grand Junction, Colo., on the western slope of the State, was placed in service this year.

During the year 1956, in order to make more efficient utilization of their respective generating capacity and to pool their respective reserves, Southern Colorado Power Co., Public Service Co. of Colorado and the city of Colorado Springs entered into an interconnection agreement, under the terms of which the three electric systems will be interconnected with jointly owned 115-kilovolt transmission lines. Pursuant to said agreement, construction was completed in 1958 on a 115-kilovolt transmission interconnection between Denver and Colorado Springs and another 115-kilovolt transmission interconnection between Canon City and Poncha junction, near Salida, Colo.

In addition to the above-mentioned 115-kilovolt transmission lines Southern Colorado Power Co. completed a new 115-kilowatt transmission line between Pueblo and La Junta, Colo., supplementing two existing 69-kilovolt circuits between said points. Also, Public Service Co. of Colorado during the year 1956 completed and placed in service a 115-kilovolt transmission line between Poncha junction, near Salida, Colo., and its Sargent substation located near the town of Center, Colo. Attention is directed to the map accompanying the proposal of the companies referred to hereinabove for ready identification of the points and locations mentioned herein.

With the completion of the transmission lines built since the presentation of said proposal to Congress, the companies will have carried out a substantial portion of the transmission line construction program contemplated to be undertaken by said companies at the time said proposal was prepared to facilitate the marketing of electric power and energy from the Fryingpan-Arkansas project as proposed in said proposal. Such program, already being carried out by the companies, should be ample evidence of the good faith of the companies in making such proposal reiterated and reaffirmed herein, and the willingness and ability of the companies to carry out the offer which they have made.

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It is respectfully requested that the committee express its approval of said proposal and recommend that no authorization be given for construction of transmission lines by the Bureau of Reclamation in connection with the project provided that suitable wheeling or similar constructural arrangements can be negotiated with the companies by the Bureau of Reclamation for the disposition of the project power.

Thank you, gentlemen.

Mr. ASPINALL. Your position is just the same today as it was before, is it not, Mr. Patterson?

Mr. PATTERSON. That is right, Mr. Congressman.

Mr. ASPINALL. You have not hurried up your activities in this area in the building of transmission lines in order to stymie any Federal transmission lines, but this has been in line with your program of many, many years?

Mr. PATTERSON. That is right, sir.

Mr. ASPINALL. Wherever it might be necessary to build a line from, we will say, the generating plant to the place where it can get to your line, you would have no objection to that sort of an operation?

Mr. PATTERSON. No, sir. That is right.

Mr. ASPINALL. The gentleman from Colorado.

Mr. CHENOWETH. I want to join with the chairman in welcoming you to the committee, Mr. Patterson. As I remember, you have been here on every hearing we have held. This is the fourth hearing and I believe you have always been one of the witnesses.

Mr.PATTERSON. That is right, sir.

Mr. CHENOWETH. I believe since your last appearance you received a very well deserved and merited promotion.

Mr. PATTERSON. Thank you, Congressman.

Mr. CHENOWETH. We are happy to now address you as vice president.

Mr. PATTERSON. Thank you.

Mr. CHENOWETH. We are happy to see you receive that recognition and wish you continued success. We appreciate your interest in this project over the years and the help you have given us. We are very grateful.

That is all, Mr. Chairman.

Mr. ASPINALL. The gentleman from Nebraska yields to the gentleman from California.

Mr. HOSMER. Mr. Patterson, how much firm power will come out of this Fryingpan generating system?

Mr. PATTERSON. I have not seen the most recent revision of the Fryingpan report, Congressman Hosmer, but I believe that it is probably about the same as it was previously. I was informed at that time that it would be somewhere around 75,000 or 80,000.

Mr. HOSMER. What is the situation with regard to dump power?

Mr. PATTERSON. I believe in the original report they thought they would have some secondary or dump.

Mr. HOSMER. Well, that is not very much generating capacity, is it?

Mr. PATTERSON. It depends on how you look at it. In that particular area it is a substantial amount.

Mr. HOSMER. The Public Service Co. of Colorado has added 366,500 kilowatts of steampower since 1956.

Mr. PATTERSON. Yes, sir.

Mr. HOSMER. And this other outfit has added 30,000 kilowatts.

Mr. PATTERSON. Yes, sir.

Mr. HOSMER. Are there any other additions in that area?

I see here 150,000-kilowatt Cherokee plant coming in 1962.

Mr. PATTERSON. That is right; yes, I believe that the city of Colorado Springs has also added some substantial amount of generating capacity during these last 5 years.

Mr. HOSMER. I imagine in accordance with good utility practice that capacity is projected forward to the needs probably to 1970; is that right?

Mr. PATTERSON. Yes, sir.

Mr. HOSMER. Now you say this 75,000-kilowatts out of the Fryingpan, of that you intend to wheel some for preference customers?

Mr. PATTERSON. Yes, sir.

Mr. HOSMER. Where would that be?

Mr. PATTERSON. We at the present time are wheeling the Colorado-Big Thompson project to some 7 REA systems at 21 different locations. We recently hooked up another location. I think it was energized within the week. We at the present time have negotiations with another REA system to be hooked to our system. So there is an expanding use of wheeling to the REA systems in our service area.

Mr. HOSMER. What is their projected need by 1970, over what they have now?

Mr. PATTERSON. I cannot give you an exact figure, but I know that the REA systems are experiencing a very substantial amount of growth as are other systems in the area, and I am certain there would be no problem involved in the sale of the power from this project.

Mr. HOSMER. Well, that would be true if you assume growth in a linear fashion of some kind, but if you have so many users and so many farms at some point the demand becomes static.

Mr. PATTERSON. In the utility business, in the electric utility business, we think of growth as being of two kinds. One we refer to as horizontal growth, which is the reaching out into new areas which are unserved, adding new customers.

Mr. HOSMER. There is not much left, then, is there?

Mr. PATTERSON. Well, the population in the State is continuing to grow. Our company, within the last 5 years, as you have noticed, hooked up more than 50,000 new customers. With the increase in population is also an increase in commercial activity and industrial activity so that there is horizontal growth yet. And there is a substantial amount of verticle growth, which is increased use of electric service by existing people. I would imagine, Congressman, that probably in your own home you are using more electricity today than you did 5 years ago. You have added new uses. That is true on the farm, in the city, and everywhere.

Mr. HOSMER. But this preference power is not going over to commercial and industrial users, is it?

Mr. PATTERSON. No, it is mainly being used on the farm and in small towns that REA's are serving. I am certain that there is a good many applications of electricity to agriculture that haven't been made.

Mr. HOSMER. I would like to get clear in my own mind how the State of Colorado is going to progress by expanding its agricultural industry as contrasted to expanding industrial and commerical activities.

Mr. PATTERSON. I would say that it is expanding in all of these fields. I don't believe that we could say that there is a lot of new acreage being brought into cultivation.

I wouldn't imply that. But on existing farms there are new applications of electric energy being made all the time.

Mr. HOSMER. That does not add much to the general economy of the State. That just consumes electricity for people's consumer needs. Is that right?

Mr. PATTERSON. I think in some cases it probably increases the output from the farm. There is the use of power, for example, in some cases, for the sprinkler irrigation, compared to ordinary surface irrigation, which, as I understand it, is a more efficient use of water. The sprinkler irrigation requires the use pumps to obtain pressure for the sprinkler systems.

In that way, the same water does a better job.

Mr. HOSMER. That in no way compares with the increased return from the use of the water than you could get by diverting its use to industry rather than agriculture, does it?

Mr. PATTERSON. It would all depend, I suppose, on what that industry might be. In some cases, no doubt——

Mr. HOSMER. They tell us the average productivity of 1,000 gallons of water used for agricultural purposes is about 10 cents worth of agricultural product, whereas the same 1,000 gallons of water used for industrial purposes results about $5 of products. The mere fact there is sprinkling of water it is not going to increase that 10-cent figure anywhere near the $5 figure, I am sure. What bothers me is the expending of $160 or $175 million for this project producing agricultural water, which has a priority. How is this area ever going to grow other than in agriculture?

Mr. PATTERSON. Well, the Pueblo area, itself, and I am talking about the urban area, not the agricultural area, has been growing over the years, and there has been a growth in industry in that area. I would expect that that would continue. There is a basic industry in Pueblo, a steel mill.

Mr. HOSMER. How is it going to continue? Apparently, from the parade of witnesses who have come through here, and I have not listened to all of them lately, there is apparently a shortage of water out there, and they want to get some more water. They want to turn the bulk of it over to agricultural uses. Industry is not going to be able to get any new use out of that. Agriculture, itself, is only going to get a half acre-foot of water out of it. Would it not be better to put this water to a higher use than to throw it on the land and grow a lot more surplus crops?

Mr. PATTERSON. I would say, Congressman, that I have not qualified myself as an expert in agriculture.

Mr. HOSMER. However, you are a vice president of a utility. I assume that your duties concern the projection of uses of power and how, in general, the uses can be made to best expand the commerce, the industry, the agriculture, the welfare of your economy.

Mr. PATTERSON. That is right.

Mr. HOSMER. So you must know something about it from that regard. You know that one industry coming in is going to require much more of your electrical product than a piddling increase, vertical increase, in the use on the farm of power. Your future lies in the industrialization of this area and the rest of Colorado, does it not?

Mr. PATTERSON. Yes. And all those things are complementing each other out there. They are working to increase the growth in electric load and the growth in population in the area.

Mr. HOSMER. How can you complement the growth of industry if you take the additional water supply that you are going to get off of this and throw it on the ground for irrigation? You can't do that. It does not follow. It is not reasonable logic, is it?

Mr. PATTERSON. I don't understand that 100 percent of the water from the Fryingpan-Arkansas project is to be used on the land.

Mr. HOSMER. Well, there are some municipal projects in Eads and maybe up in Colorado Springs and a few other places. But that is largely going to go for just plain watering of the lawns and taking of baths and things like that.

Mr. PATTERSON. Well, it would take care of small industries, too. They would be under the heading of the municipal uses.

Mr. HOSMER. Does not that municipal water take second place to the demands of the agriculture?

Mr. PATTERSON. As I said before, I don't believe that all of the water is to be used for either purpose. That is, both purposes will be served. There will be some uses for municipal purposes. Municipal water systems supply all smaller industries. Only real large, major industries that need lots of raw water would be buying water directly from a project anyway.

Mr. HOSMER. If you get any kind of substantial industrial development in that area, I don't think there is any question or doubt that it would be competing with your agricultural people for the water. The agricultural people are riding through on a priority. As a consequence, the expansion, if at all, is going to be in agriculture and not in industry. You are asking for $160 to $175 million to freeze the economic progress of this particular area. I assume if you look at it that way and resolve your position, that is the way you want it. I won't argue with you on that point. But I do like to get it on the record, not only for this area but for the whole country.

Mr. ASPINALL. Will the gentleman yield?

Mr. HOSMER. As the chairman knows, we are wasting water.

Mr. ASPINALL. It could very well be that the Congressman depends on the counties outside of Long Beach who use agricultural water to furnish the foodstuffs to the people of Long Beach. That is exactly the point involved here. If Mr. Patterson had taken the time to tell of a coal mining operation that is being opened up south of Glenwood Springs, where there is a large use of electric power coming into play, and the public service development at Palisades, Colo., where they formerly had 22,000 kilowatts which now goes to 44,000 kilowatts in order to take care of the increased load that the public is demanding in this area, he could have said that. This, of course, is one of the great undeveloped areas of the United States. Although the population is expanding, it is expanding not quite as much in the industrial line as my colleague from Long Beach might

suggest, and there are those of us who do not want it to expand too fast in industrial endeavors.

We want to get our share of industries to be able to take care of it, but we are still an undeveloped area. And when they begin to call for our minerals and our power values to feed the needs of the rest of the great West, I think you will see that there is this synchronization of needs and service that Mr. Patterson refers to. We all have to look at the problems of each other.

Long Beach has Imperial Valley. What greater combination could you have? Look at the Imperial Valley and Colorado River water. What greater combination could you have in order to serve the people? This country of ours is not going to be opened unless it is integrated, and each of us receiving our just share and not claiming any more than our just share to the natural resources of our Nation.

Mr. HOSMER. I cannot say that I even followed you on your statement, Mr. Chairman.

The first thing I want to know is what there is in this bill for Long Beach, since that seems to be brought into issue. The second point I would like to make is that I was talking about not demands and requirements for electricity, but for water. I was attempting to point out that in the water-short West and soon to be water-short East, we can no longer, logically and patriotically, disregard the question of the higher use of water. I do not like to skim over it. Consequently, I do not think I will accept the chairman's very fine exposition that really had no connection with what I had in mind.

Mr. ASPINALL. I would not suggest that my dissertation was any more obtuse than that of my friend and his first remarks. I would suggest to my friend from Long Beach that those of us in the upper basin very seldom tell those in the lower basin how to use their water to which they are entitled under the Colorado River compact.

Mr. HOSMER. That is quite correct. You attempt to keep it from us instead.

Mr. ASPINALL. You have yours and we will have ours, and we can do what we want with ours and you do with yours what you wish to do.

Thank you very much.

Mr. HOSMER. I have not finished yet, Mr. Chairman. I merely yielded to the gentleman for a speech.

Mr. ASPINALL. I had hoped that my friend's speech was through, but he may proceed.

Mr. CHENOWETH. Would the gentleman yield?

Mr. HOSMER. Yes.

Mr. CHENOWETH. The amount of power to be generated by this project is around 124,000 kilowatts. It was about 104,000, I believe, in the original plans, but this has now been increased to about 124,000 kilowatts. You mentioned a figure of 80,000.

Mr. PATTERSON. As I understood it, Congressman, out of the 103,000, I have been advised that about 80,000 of it was firm, in other words available at all time, and the balance was secondary.

Mr. HOSMER. I do not believe I have any further questions, Mr. Chairman.

Mr. ASPINALL. Thank you very much, Mr. Patterson.

The next witnesses will be Mr. A. Allen Brown, president of the Colorado River Water Conservation District; Mr. John Barnard,

Sr., attorney for the Colorado River Water Conservation District; and Mr. Phil Smith, secretary.

STATEMENT OF A. ALLEN BROWN, PRESIDENT, COLORADO RIVER WATER CONSERVATION DISTRICT

Mr. BROWN. Thank you, Mr. Chairman.

Mr. ASPINALL. It is my understanding that each of you have a statement that you will present. We will listen to the statement of each of you and then question you at the conclusion.

You may proceed, Mr. Brown.

May the Chair state for the record that these three gentlemen come from the congressional district of the chairman of the full committee.

We are glad to welcome you here today, gentlemen.

Mr. BROWN. Thank you very much, Mr. Chairman.

For the information of the committee, I am the president of the river district. To my immediate left is our counsel, Mr. John B. Barnard, Sr., of Granby, Colo., and to his left is Mr. Phillip Smith, our secretary-engineer. So if you want legal information or engineering information, kindly ask my colleagues to the left, and I will just fill in on general observations.

Mr. Chairman and members of the committee, my name is A. Allen Brown. I am president of the Colorado River Water Conservation District, which district was originally created in 1937 and which comprises the northwest and west central parts of the State of Colorado and encompasses approximately one-fourth of the area of that State. This is in the home area of Congressman Wayne N. Aspinall.

This district is drained to the Pacific Ocean by the main stem of the Colorado River and its principal tributaries which include the Blue, Eagle, Roaring Fork, Fryingpan, Gunnison, White, Yampa, and Little Snake Rivers. These western Colorado streams produce approximately 52 percent of the undepleted flow of the Colorado River system. The rest of the water produced is in southwestern Colorado.

For many years, this district has not actively supported the construction of the Fryingpan-Arkansas project. However, as a result of many conferences and careful study of the many factors involved in the presently planned transmountain diversion and with the assistance of the Honorable Steve McNichols, Governor, and the Honorable Felix L. Sparks, director of the Colorado Water Conservation Board, and by removing certain objectionable features and reaching an agreement on others, our district is now appearing before you to advise you that the members of our board of directors, the governing body, have voted overwhelmingly in favor of the construction of the Fryingpan-Arkansas project essentially as the same is outlined in the operating principles which have been approved by the several water districts and by the State of Colorado on April 30, 1959, as amended on December 30, 1959.

As you probably know, and as has been stated, the Federal and State agencies have spent approximately $1½ million on investigation and promotion of this project.

One of the principal factors that has heretofore caused hesitation on the part of our district to actively support this project has been our experience with the operation of transmountain diversions through the Twin Lakes tunnel and their effect upon the Roaring Fork River which joins with the Fryingpan River at Basalt, Colo., and from that point flows on to the Colorado River at Glenwood Springs.

Originally the proponents of the Twin Lakes project promised to divert water for storage in eastern Colorado only during flood season. It soon developed, however, that because of the high altitude of the collection system and because the collection canals were filled with ice and snow during the flood season, the system was inoperable during such period of time. As a result, such diversions can only be made in June or July and this procedure was followed because the court decrees have given priorities which permits the diversion of water during the summer months. As a result, the Roaring Fork River in the vicinity of Aspen has been practically dried up and, among other things, has had an adverse effect upon recreation and fishing as well as upon the future development of that area.

With these factors in mind, it was originally proposed that in connection with the construction of the Fryingpan diversion that the water users promoting the project would construct a 28,000 acre-foot reservoir on the Roaring Fork above the town of Aspen so that, when waters were being collected and diverted from the headgates of the Fryingpan, water could be released into the Roaring Fork during the summer months to take care of irrigation and other beneficial decreed uses and also to revive the stream as a living stream for fishing and recreation during the summer months. Considerable opposition developed in the area, however, to this reservoir. It was estimated that the same would cost $7,600,000 for the storage of 28,000 acre-feet.

After many conferences, the following changes were made, which we feel are beneficial to all of the parties concerned:

First. That the $7,600,000 allocated to the Aspen Reservoir has been transferred to be used toward the construction of the Ruedi Reservoir on the Fryingpan which is to have an active capacity of not less than 100,000 acre-feet and the total cost of which will be approximately $12 million. It is also planned that a smaller reservoir of 5,000 or 6,000 acre-feet will be constructed at the Ashcroft site or the Taggert Lake site on the Roaring Fork watershed above Aspen for the purpose of reviving that stream.

Second. That contracts are to be made for the control of the Twin Lakes Reservoir diversion.

Third. That the Southeastern Colorado Water Conservancy District and the Colorado River Water Conservation District have obtained equal priorities to the waters of the Fryingpan River and the conditional decree in favor of the transmountain diversion portion of the project, Priority No. 718, is the same priority as has been awarded to the Colorado River Water Conservation District for the storage of water in the Ruedi Reservoir. This priority is subsequent in time to existing irrigation decrees on the Fryingpan and Roaring Fork Rivers. By each of the districts obtaining the same priority it is now possible for them to share water shortages as well as limited surpluses which is an important factor in an arid area where the right to the use of water is determined by priority number.

Fourth. Certain limitations have been agreed upon in regard to the diversions, including:

(*a*) The fact that such diversions are subject to the provisions of the 1922 Colorado River compact and the 1948 upper Colorado River compact.

(*b*) That diversions to the Arkansas Valley shall not exceed 120,000 acre-feet in any one year, nor more than an annual average of approximately 69,000 acre-feet in any 34-year period.

(*c*) Adequate protection has been made for the fishing and recreational uses in said area.

Fifth. The construction of the Ruedi Reservoir creates a body of water on a high elevation watershed in western Colorado to be used for the following purposes:

(*a*) As replacement water to keep our streams alive during the periods of time water is diverted to the Arkansas Valley.

(*b*) To permit future development of municipal, industrial, and irrigation uses in western Colorado. We submit that further investigation of the irrigation uses in Cattle Creek and Sopris areas will establish that the Ruedi Reservoir is even more feasible than has been contemplated to date.

(*c*) As a partial supply for the development of U.S. naval oil shale reserves of 64,000 acres of oil shale lands in the vicinity of Rifle, Colo. We are advised that the Government reserves are capable of producing 22 billion barrels of oil.

Sixth. The construction of a smaller reservoir on the headwaters of the Roaring Fork will do a great deal toward the restoration of that stream.

As a result of these arrangements, all of the official water agencies in the State of Colorado have now approved this project and are requesting its authorization and construction and you can now be assured that the possibility of litigation over water rights in connection with this project has been virtually eliminated. We believe that we can now all continue to develop both western and eastern Colorado with this project.

However, we do want it understood that our approval of this project on the conditions outlined in this bill and as they may be refined from time to time, is not to be construed to mean that we consent to the exportation of any more water from our part of the State. If the federally owned resources and the other potential resources of western Colorado are ever to be developed, there is no more water available for exportation over and above present commitments, including the commitment on the Fryingpan-Arkansas project.

Mr. ASPINALL. Thank you very much, Mr. Brown. Mr. Barnard, you may proceed.

STATEMENT OF JOHN BARNARD, SR., ATTORNEY, COLORADO RIVER WATER CONSERVATION DISTRICT

Mr. BARNARD. Mr. Chairman and members of the committee, my name is John B. Barnard. I am an attorney residing and practicing in Granby, Grand County, Colo.; and I appear here today as counsel for the Colorado River Water Conservation District. The district was created and exists for the primary purpose of effecting the utilization,

in the natural basin of the stream within its boundaries, of all the water which can be put to beneficial use therein. To assure that there shall be sufficient Colorado River water for the fullest possible development in western Colorado, the district must and it will resist any and all exportations of the water of the Colorado River beyond its natural basin, over and above such as have been accomplished to date and the limited amount of water involved in the project now under consideration.

This is the third time I have appeared before this committee to present my views in connection with the Fryingpan-Arkansas project. It now should be named the Fryingpan-Basalt project. It was originally conceived primarily as a transbasin diversion scheme with benefits accruing to eastern but not to western Colorado. It is now a plan of water resource development which includes, as an equally important objective, full utilization of the water of the stream for irrigation, domestic, municipal and industrial purposes in the natural Colorado River Basin itself.

In 1953 I was here opposing the authorization of the Fryingpan-Arkansas project as then planned. I was here again in 1957, as counsel for the Colorado River Water Conservation District, requesting the committee to include an amendment to the authorizing bill, imposing a limitation upon the amount of Colorado River water which may be taken in transmountain diversion, to 20 percent of the amount apportioned to Colorado. Were conditions and circumstances the same now as they were in 1953, I should again oppose the legislation as I did then. And I am still dedicated to the proposition that, by some means, legislative or otherwise, a limitation must be imposed upon the amount of water which, in the future, may be exported from the Colorado River Basin. The limitation amendment which we submitted to the committee in 1957 would have accomplished that result; but, since that time, other means, methods and procedures appear to be available to accomplish the same result.

Today I am here, on behalf of the conservation district I have the honor to represent as counsel, urging that the bill to authorize construction of the Fryingpan project be approved; and I shall, briefly, state the reasons for that request, and I shall reconcile that request with the positions I have previously taken before the committee.

In 1953, many of us in western Colorado considered the Fryingpan project to be, as it was originally planned by the Bureau of Reclamation, merely the first phase of the Gunnison-Arkansas project. This larger plan would have diverted so much water from the Colorado River as to have constituted a major disaster to western Colorado. By means of certain operating principles which are not embodied in but made reference to in the bill now before you, and by the establishment of decreed rights to the water of the Gunnison and Fryingpan Rivers by the Colorado River Water Conservation District, the Fryingpan project now stands alone; and the threat of the larger scheme has been effectively averted.

The 1953 version of the Fryingpan bill provided for and required the construction of the Aspen Reservoir on the Roaring Fork River, with a live capacity of 28,000 acre-feet. While it was provided in the bill that all of the water stored in the Aspen Reservoir, in excess of replacement requirements for the project, was to be available for

sale or rental in western Colorado, this provision was actually meaningless. When there is full development of water resources in western Colorado by means of what are now termed "participating projects" comprehend in the Colorado River Storage Project and Participating Projects Act, practically all of the water stored in the Aspen Reservoir would have been required for replacement purposes for these various basin schemes; and no benefit at all would have accrued to western Colorado.

The bill now before you requires the constructionfi as a part of the project, of the Ruedi Reservoir, which is the key feature of the Basalt project of the Colorado River Water Conservation District. That is the reason why I said initially, early in my statement, that it should be called the Fryingpan-Basalt project at this time for accuracy of descriptive language. As against a capacity of 28,000 acre-feet in the Aspen Reservoir, the Ruedi Reservoir will impound not less than 100,000 acre-feet. The operating principles provide that this stored water may only be used for project replacement purposes in connection with presently existing uses in western Colorado. Future development in the Colorado River Basin will not affect these replacement requirements. Hence all of the water to be stored in Ruedi Reservoir in excess of replacement requirements for the Fryingpan-Arkansas project, as those replacement requirements are determined by present use in western Colorado, will be available for agricultural, municipal, domestic, and industrial uses in the Colorado River Basin. It is estimated that the average annual amount of water which can be stored in the Ruedi Reservoir, after diversions to the Arkansas Basin are deducted from the normal flow of the stream, will be approximately 70,000 acre-feet, 2½ times the total capacity of the Aspen Reservoir.

The Basalt project is designed to make beneficial use of the water of the Fryingpan River for several very essential purposes, which are, possibly not in order of importance:

1. It, together with direct flow diversions from the Fryingpan and tributaries of the Roaring Fork River during the high water period, will make available an adequate water supply for the irrigation of approximately 20,000 acres of extremely fertile and potentially productive land. By no other means can such a supply of water be provided for that particular area.

2. When the inevitable development of the oil shale industry comes into reality, approximately 35,000 acre-feet of water will be made available for that development. No dependable supply of water can be assured for the oil shale development without storage; and the Ruedi Reservoir will provide a substantial part of the storage which ultimately will be required for that industry.

3. Development of the oil shale industry will result in a substantial increase in the urban population of the Grand Valley in which the oil shale deposits are located. The municipal needs of this population can be met, at least during the early stages of this development, by water impounded in the Ruedi Reservoir.

The U.S. Navy has evidenced a keen interest in the construction of the Ruedi Reservoir as a means of providing water for the development of the oil shale industry in the Grand Valley, as disclosed by a letter dated January 29, 1960, from the then Acting Secretary of

the Navy, to Hon. Fred A. Seaton, Secretary of the Interior, which letter is specifically directed to the subject I am here discussing. Two excerpts from that letter are here quoted:

> The importance of the proposed Reudi Dam and Reservoir insofar as the Navy is concerned is the water it would make available for oil shale in the western Colorado area. Near Rifle, Colo., the Navy has two oil shale reserves comprising in the aggregate approximately 64,000 acres. The oil content of this area is estimated to be 5 billion barrels of recoverable shale oil in which shales assaying 25 gallons or more per ton, and about 22 billion barrels from the entire deposit, both rich and lean, if shales assaying as low as 15 gallons per ton are considered.

Again, the letter says:

> It is also recommended, because of the great importance of shale development to the national defense, that any future studies of the utilization of the water resources of the Colorado River in the western Colorado area take into consideration the possible impact upon this area of the development of an oil shale industry.

A copy of the letter itself appears in the report to Congress made by Secretary Seaton; and I simply quote the above excerpts therefrom to point up and to emphasize the fact that the provisions of the bill now before you have convinced me that the future welfare of the part of Colorado which I represent, and the State of Colorado itself, will be greatly enhanced by the construction of the Fryingpan project, including the Ruedi Reservoir, as now planned. In fact, I think it is not an exaggeration for me to say that the future safety and welfare—perhaps the existence of the United States of America may well depend upon the almost inexhaustible supply of oil now locked up in the shale beds which lie in the Grand Valley of Colorado.

In 1953 I raised a question as to the dependability of estimates then made by the Bureau of Reclamation of construction costs of the project. My misgivings grew out of the experience the Bureau had with the actual, as contrasted with the previously estimated cost of construction of the Colorado-Big Thompson project. It appears to be clear that the procedures and techniques of the Bureau in estimating construction costs and water supplies have been refined and improved, since its experience with the Colorado-Big Thompson project, to the extent that the Fryingpan forecast of cost can be accepted as accurate within reasonable limits.

In conclusion, I wish to make this observation: The controversy which has existed in the matter of the Fryingpan-Arkansas project has resulted in protests, prejudices, and regrettably, bitterness on both slopes of the Continental Divide in Colorado. It would be a remarkable thing if these feelings did not still persist. And I do not presume to criticize any individuals who still entertain them. But I think I can say accurately that, as nearly as unanimity of thought on a project of this magnitude can be achieved in any State or area, that has been brought about in Colorado. In view of the fact that the Fryingpan-Arkansas project has now become the Fryingpan-Basalt project, with benefits of inestimable value and import to western Colorado, our district supports it and requests the approval of the bill now before you.

Mr. ASPINALL. Thank you very much for a very fine statement.

Mr. Smith, we will now hear your statement.

STATEMENT OF PHILIP P. SMITH, SECRETARY-ENGINEER, THE COLORADO RIVER WATER CONSERVATION DISTRICT

Mr. SMITH. My name is Philip P. Smith. I am the secretary-engineer for the Colorado River Water Conservation District, whose offices are located in Glenwood Springs, Colo. The district is a political subdivision of the State of Colorado and was described to you by Mr. A. Allen Brown, president of the board of directors for the district, and by Mr. John B. Barnard, district counsel, whose statements you have just heard. I am a registered professional engineer and have been actively engaged in water resources development work for more than 30 years.

Mr. Brown related to you that western Colorado water rights for the Fryingpan-Arkansas project were decreed under a consent agreement between the Southeastern Colorado Water Conservancy District, sponsors of the Fryingpan-Arkansas project, and the Colorado River Water Conservation District, sponsors of the Basalt project. The original development plan and a water right decree of June 20, 1958, far the Basalt project provided for full use of the waters of the Fryingpan River in western Colorado. The supplemental consent decree, approved by the district court of Garfield County, Colo., August 3, 1959, established an equal priority date of July 29, 1957, for the use of the Fryingpan River water for serving both projects.

Obviously, in reaching this consent agreement it was necessary that a part of the water previously decreed to the Basalt project for maximum development under the project be surrendered to make possible a decree of equal date for Fryingpan River water needed for the Fryingpan-Arkansas project. In giving up this water it became necessary that we remove from our development plan for the Basalt project a potential hydroelectric powerplant which would have produced an average of 128 million kilowatt-hours of electric energy annually. This plant was of substantial importance to the economic justification of the Basalt project as then planned. In effect, this is what took place. In order to promote maximum water resources development in Colorado with unified support from all sections of the State we surrendered our power potential of the Basalt project in return for the assistance to be provided by the Fryingpan-Arkansas project in the construction of the Ruedi Reservoir and possible help in the construction of a lesser reservoir on the headwaters of the Roaring Fork River, if that latter reservoir is subsequently found to be feasible. This resulted in no hardship to the Fryingpan-Arkansas project since the financial contribution that project will provide for the construction of the Ruedi Reservoir is the same as the expenditure that would have been necessary for the construction of the Aspen Reservoir contained in earlier versions of the Fryingpan-Arkansas project plan, but not contained in the current plan of development for that project.

The Ruedi Reservoir and the small reservoir on the headwaters of the Roaring Fork River tentatively selected at the Ashcroft site will perform the same replacement services for the Fryingpan-Arkansas project as would have been accomplished with construction of the Aspen Reservoir, and will also assist western Colorado in expanding

her agricultural and industrial economy. I, therefore, urge your favorable consideration of the bill before you.

The Colorado River Water Conservation District is now anxious to bring about the expeditious investigation, authorization, and construction of the water delivery features of the Basalt project. Your attention is directed to a map of the project attached to this statement. It shows the Ruedi Reservoir, the lands that would be served in the Basalt project and the water delivery facilities needed to provide that service.

(The map referred to faces this page.)

Mr. SMITH. This project would divert Fryingpan River water at the Ruedi Dam to irrigate approximately 13,500 acres of new land and provide supplemental water for 6,500 acres of land now inadequately irrigated. Most of these lands are situated on high benches above the Roaring Fork Valley. Their only potential source of gravity water supply, because of their location, is the Fryingpan River. Ruedi Reservoir is the key storage feature for both the Fryingpan-Arkansas project and the Basalt project. It will provide the needed storage on the Fryingpan River for a firm water supply for the Basalt project lands, as well as the required replacement by the Fryingpan-Arkansas project. The irrigation of these Basalt project lands, to allow maximum diversion for increased production of winter feed crops for the basic livestock industry of the area, is of vital economic importance to the ranchers and tradesmen of the three-county area of western Colorado in which the project is contained.

As engineer for the Colorado River Water Conservation District in making the filings for the Basalt project and in developing the project plan, surveys of the project facilities were performed in considerable detail, and water supply, cost estimate, and economic studies were prepared. A land classification survey performed by the Bureau of Reclamation in 1950 of the project lands, as a part of their study for the Cliffs-Divide project status report, issued in February 1954, was utilized in the district's studies.

At the request of the Colorado Water Conservation Board, the official agency in charge of water matters for the State of Colorado, I prepared two reports which were included as appendixes "E" and "F," respectively, in the Bureau of Reclamation report on the Ruedi Dam and Reservoir, Colo., issued September 1959. Appendix E is entitled "Possible Use of Ruedi Reservoir for Meeting Storage Requirements for Municipal and Industrial Water for the Shale Oil Industry, Rifle-DeBeque Area, in Colorado," and Appendix F is entitled "Report on Basalt Project." Combined, these appendixes present plans for the complete utilization in western Colorado of that part of the storage in Ruedi Reservoir not required for the Fryingpan-Arkansas project. The data presented in these two appendixes provides information regarding the Basalt project that time will not allow for presentation in this statement. In considering the merits of providing for the study of this development by the Bureau of Reclamation, your attention is respectfully directed to these two appendixes. Appendix F definitely shows economic justification for construction of the Basalt project. The irrigation features of the project could be constructed for about $10 million and would provide a benefit-cost ratio of approximately 1.5–1.

GENERAL MAP
OF THE
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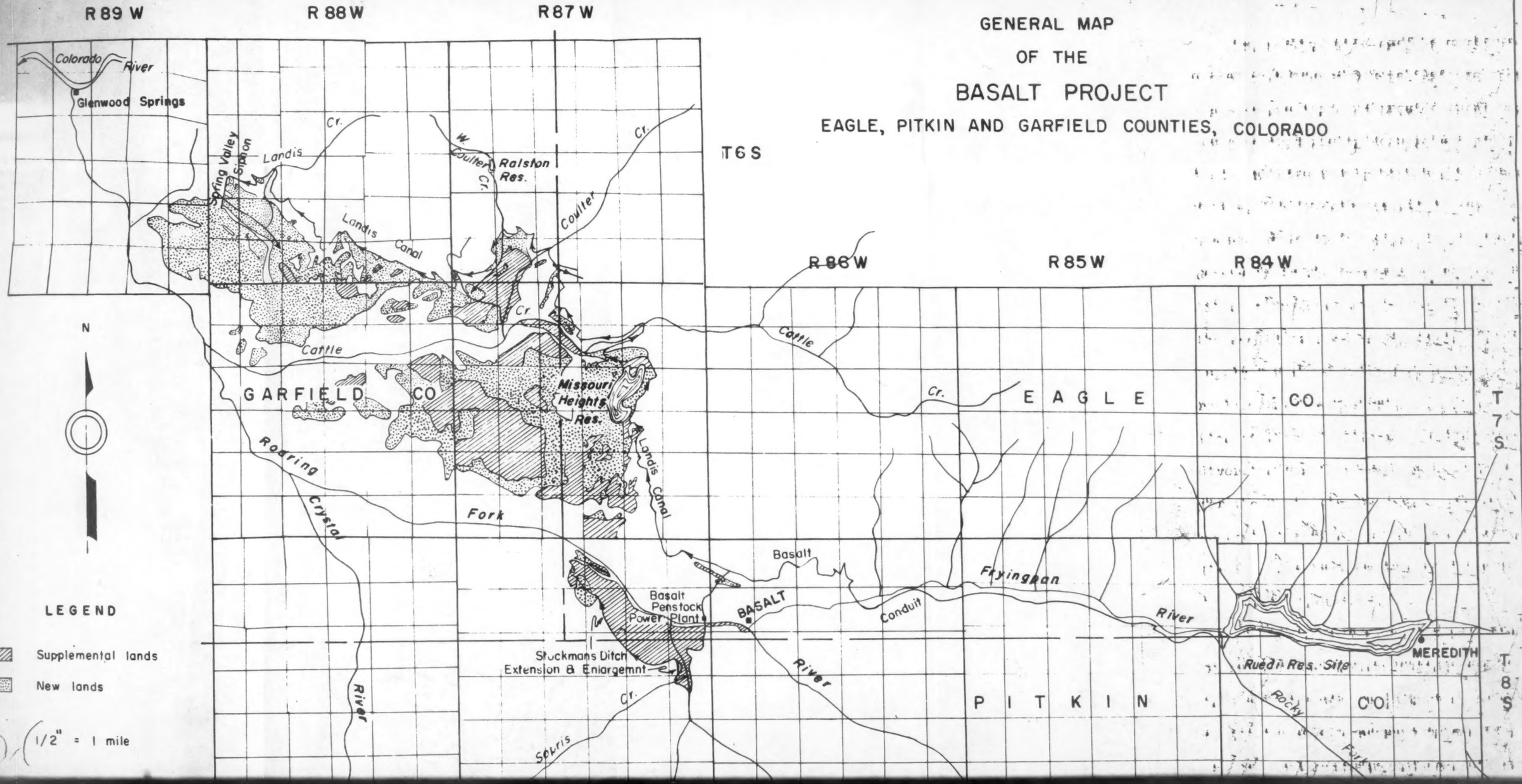
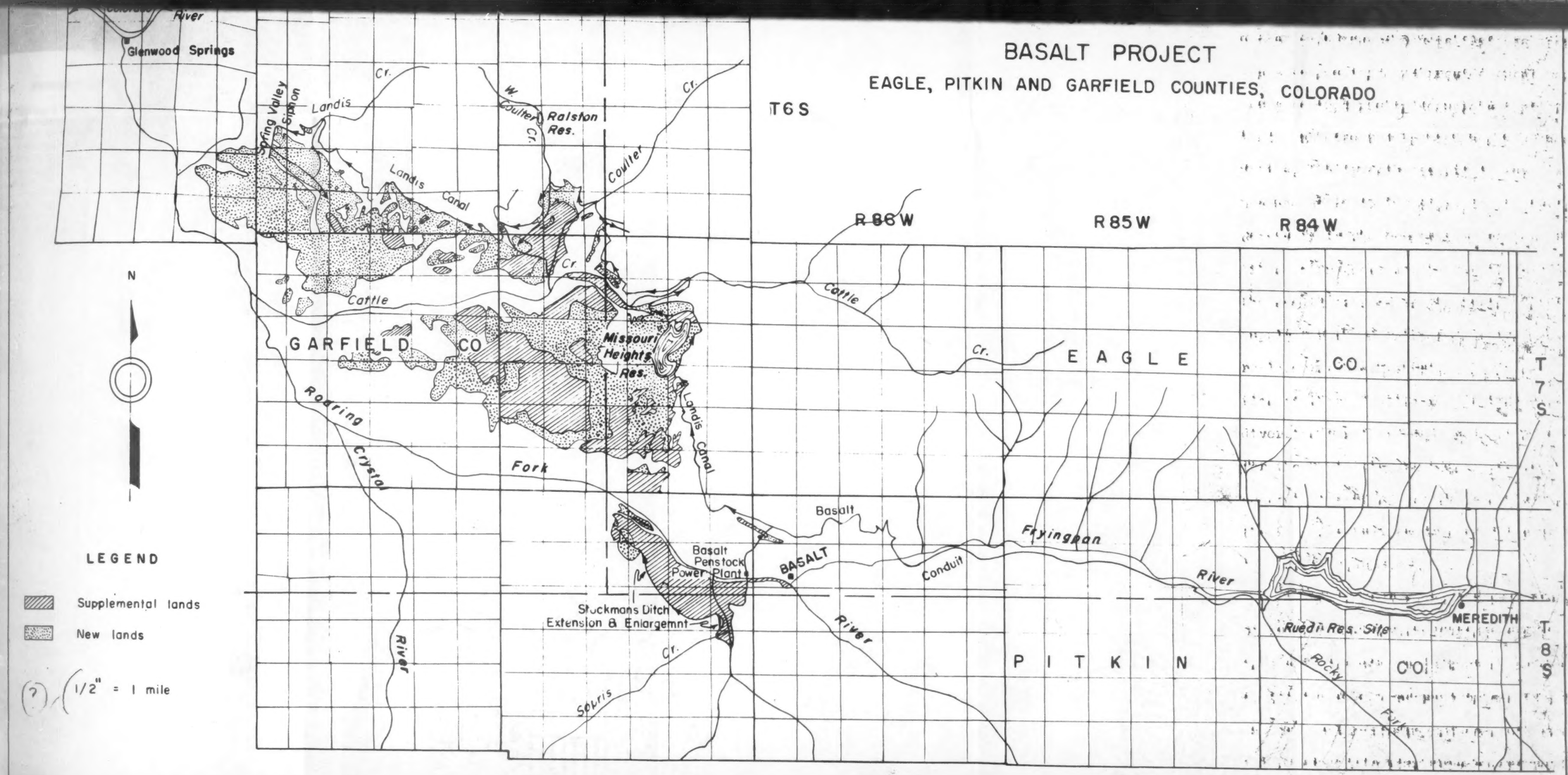
EAGLE, PITKIN AND GARFIELD COUNTIES, COLORADO



BASALT PROJECT

EAGLE, PITKIN AND GARFIELD COUNTIES, COLORADO



Before closing I would like to mention that the bill you are now considering mentions the necessity of constructing, as a western Colorado feature of the Fryingpan-Arkansas project, the Ashcroft Reservoir or a substitute therefore on the headwaters of the Roaring Fork River, if found feasible. Such a reservoir would help to offset the effect of increased diversions through the existing Twin Lakes Tunnel, which conveys water from the Roaring Fork River to the Arkansas River Basin. The increased diversions would be made possible by enlargement of the storage capacity in the Twin Lakes Reservoir on the Arkansas River to be provided as a holdover storage feature of the Fryingpan-Arkansas project.

We understand that feasibility studies will be undertaken by the Bureau of Reclamation in the near future if the Fryingpan-Arkansas project is authorized. I am pleased to report that I am now negotiating to contract for the photogrammetric mapping of the Basalt project area to expedite and facilitate these studies. The Colorado Water Conservation Board and my district are cooperating in these negotiations.

I appreciate this opportunity to recommend your favorable consideration of H.R. Nos. 9229, 9230, 9231, and 9232 and the possible coordination of the development it provides with water resources development in western Colorado.

Mr. ASPINALL. Thank you very much, Mr. Smith. The map has been made a part of the record.

The Chair recognizes his colleague from Nebraska, Mr. McGinley.

Mr. MCGINLEY. No questions.

Mr. ASPINALL. His colleague from Long Beach.

Mr. HOSMER. Mr. Brown, you mentioned in your testimony that the limitation amendment submitted in 1957 would accomplish a certain result, but other means or procedures now appear to be available to accomplish the same result. Namely, I think you refer to limiting the transmountain diversion to 20 percent of Colorado's water.

Mr. BROWN. I think that is Mr. Barnard's statement.

Mr. HOSMER. Yes. Excuse me.

Mr. BARNARD. That is right.

Mr. HOSMER. What are the other means?

Mr. BARNARD. Well, they consist, as set out in the statements, primarily of stabilizing prior rights to the water that could be taken in transmountain diversion.

Mr. HOSMER. That is internal to Colorado. That is not external to Colorado.

Mr. BARNARD. No, that is within the framework of the laws of Colorado.

Mr. HOSMER. The situation apparently switched between 1957 and today. Couldn't it switch back somehow, with changes in the constitution or some other business out there?

Mr. BARNARD. Not unless the State of Colorado amends its irrigation laws and changes its constitution it can't switch back, because we have obtained these decreases.

Mr. HOSMER. There are ways and means provided to change the constitution of Colorado.

Mr. BARNARD. Yes. I presume the Constitution of the United States could be changed, Mr. Hosmer, which could kick us all in the river.

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Mr. HOSMER. There are ways and means provided to change the constitution of Colorado.

Mr. BARNARD. Yes. I presume the Constitution of the United States could be changed, Mr. Hosmer, which could kick us all in the river.

Mr. HOSMER. That is right. But my point is, though, that insofar as the State of Colorado is concerned, it still has a latent power to change these things, and if anybody outside the State of Colorado is worried about the limitation of transmountain diversion, he has to look elsewhere for his satisfaction on that issue.

Mr. BARNARD. There is always a possibility of amending any laws in any State, certainly.

Mr. ASPINALL. Would my colleague yield at this point?

Mr. HOSMER. Yes.

Mr. ASPINALL. I think this is a very important part of the presentation.

Is it your opinion, Mr. Barnard, that the procedure which you have followed recently in getting the additional decrees will more than likely be more effective than any limitation provision that we might place in this legislation as was suggested in our last hearing?

Mr. BARNARD. I wouldn't say it would be more effective. I would say it would be as effective as the other method.

Mr. HOSMER. Mr. Barnard, since you seem to feel that it is effectively a limitation anyway, would you object to an amendment to this bill which would provide for a 20-percent limitation on the beneficial consumptive use of Colorado article 3(a) water, that would require that all future patents, grants, contracts, concessions, leases, or permits and licenses, rights-of-way, or other privileges from the United States necessary or convenient for the use of Colorado River water or its tributary waters flowing within Colorado shall not be utilized to effect a total diversion out of the basin of more than 20 percent of that 3(a) water?

Mr. BARNARD. Mr. Hosmer, if a bill authorizing construction of this project could be passed by the House, including that amendment, I would welcome it. The question in my mind is whether it could or not.

Mr. HOSMER. As I understand it from you, you cannot divert any more water than this 20 percent anyway, so why couldn't you satisfy my people down in California?

Mr. BARNARD. I am not the one to satisfy your people Mr. Hosmer. The Congress is the one to do that. As I say, if the Congress should pass such a bill containing such an amendment, I would have no objection to it. But I am not the one who has the last guess at it.

Mr. HOSMER. That is fine, but do you see where such an amendment would in any way place Colorado at any disadvantage?

Mr. BARNARD. Not if the bill could be passed with such an amendment, I can't see that it would; no.

Mr. HOSMER. So the people of Colorado should have no reason to object to such an amendment?

Mr. BARNARD. I can't speak for the people of Colorado. I can only speak for the people in our district.

Mr. HOSMER. Well, if it would not hurt them any, in your judgment, they should not object to it, is that true?

Mr. BARNARD. By "they," whom do you mean?

Mr. HOSMER. The people of Colorado.

Mr. BARNARD. I wouldn't attempt to speak, for example, for the people of the city of Denver. They may think it would hurt them badly. I don't know. But I can speak for the people in our area, I think. If I cannot, the president is here to correct me.

Mr. HOSMER. Let me get this straight—and I think I better direct this question to Mr. Brown—you people on the west slope violently objected to this project for a long time. Then we come along and change the project. Well, we essentially make it two projects, the Fryingpan project and the Basalt project. Now you are happy with it. Is that essentially right?

Mr. BROWN. We are not going to say we are particularly happy, no. But, Mr. Hosmer, we are talking about Colorado's share of this water. In 1922, a compact was made between the two basins, the upper basin and the lower basin, which allocated a certain amount to each portion. In 1948 the upper basin States made another compact which allocated 51 and a fraction percent of the upper basin water to the State of Colorado, which is roughly 3 million acre-feet. At the present time we are committed or are exporting about 600,000 acre-feet of that. We are using about 1.5 million acre-feet.

Our future development requires that the remainder of that water be left there for our use. We expect to put it to a use. We expect that it will be necessary to put it to a use. Muncipalities, industries, and agriculture will require it. I say agriculture advisedly because last week I came across 2,000 miles of this beautiful country of ours and one thing that impressed me was the beautiful farmlands that are being converted into highways. If you will pick up a map at the present time and see these projected national highways and where they go, and the lands that they will convert into nonproductive areas, we must look to the future if we are going to have something to eat the day after tomorrow.

Mr. HOSMER. Let me say this, that there are some other figures available that the production per-acre increase in the land that is left produces much more agricultural products than the land would have that has been made into highways and so on.

Mr. BARNARD. It is amazing the land that they pick out, but those are some of the problems. You say why have we made a difference. Well, it is because the project as proposed had very little benefit to our portion of the State. As it has been changed, and indifference and out of respect to our fellow citizens on the eastern side of Colorado and in order to help our State develop, we have given up some rights that we had hoped would not be necessary to be given up.

Mr. HOSMER. But the overall project has been sweetened up as far as you are concerned by this Ruedi Reservoir?

Mr. BARNARD. There have been benefits put into it which look attractive to us; yes, sir.

Mr. HOSMER. Furthermore, as I understand it, the entire cost of the Ruedi Reservoir is borne over on the other slope?

Mr. BARNARD. No. We are taking the 7.6 million acre-feet allocated to the Aspen Reservoir.

Mr. ASPINALL. I believe you mean dollars.

Mr. HOSMER. But that is allocated in this bill. The water conservation district has not bound itself to pay any of that $7.6 million, has it?

Mr. BARNARD. Not the $7.6 million. That is part of it——

Mr. HOSMER. They have not bound themselves to pay any of the difference between the $7.6 million and the $12 million; namely, $4.4 million. Have they?

Mr. BARNARD. Well, our river district, as such, is not a water user. But we know that projects are coming up which will——

Mr. HOSMER. Well, you get $10 million worth of irrigation canals that your people will pay for, but they will not participate in paying for the $12 million cost of the Ruedi Reservoir, will they?

Mr. BARNARD. About $4 million worth we anticipate. Of course, we are having to give up the power revenue.

Mr. HOSMER. Wait a minute. The Ruedi Reservoir costing $12 million is authorized in this bill. Therefore, you are paying for it.

Mr. BARNARD. We are transferring.

Mr. Smith has worked those figures out.

Mr. SMITH. The $12.8 million total cost of the Ruedi Reservoir, $7.6 million of it would be paid by the Fryingpan-Arkansas project. There would be certain nonreimbursable benefits, uses of that reservoir, and it would be about $3 million that would be the obligation on western slope uses, such as municipal and industrial uses, and agricultural uses, under the Basalt project. The Basalt project would require about 50 percent of the yield of that reservoir, about 35,000 acre-feet per annum.

Mr. HOSMER. That is if and when the Basalt project ever gets going.

Mr. SMITH. That is what we want, to determine the feasibility of that Basalt project as rapidly as possible, and to be assured that we can use that water and pay for it, pay our share of it.

Mr. HOSMER. But if it is found unfeasible, who pays for that $3.8 million?

Mr. SMITH. Well, certainly you couldn't expect a water conservancy district to be organized in western Colorado and obligate itself to pay for that unless they knew that they had feasibility on the Basalt project.

Mr. HOSMER. Suppose it goes back to the Federal?

Mr. SMITH. I think the answer is to establish feasibility of the Basalt project and then organize a conservancy district to obligate itself to make that repayment.

Mr. HOSMER. But you just said if it is not feasible it would not be established. I am directing my questions to that instance.

Mr. SMITH. I am sure it is feasible.

Mr. HOSMER. I suppose it is feasible. But I can't understand why you folks did not hold on to your resistance until you got this Basalt project and all its features actually included in here. You are going to have to come back here now and fight for the Basalt project.

Mr. BROWN. That is included. The Ruedi Reservoir is what we call the Basalt project.

Mr. HOSMER. You will have to have another $10 million for irrigation ditches and things like that, do you not?

Mr. BROWN. That is right, too.

Mr. HOSMER. You are going to ask us to authorize that?

Mr. SMITH. Yes, sir; as a participating feature of the Colorado River storage project.

Mr. HOSMER. I think that that ought to be wrapped up in one bill and the whole ball of wax considered together, since you are not only on a contingency, but you have also given up a very considerable power potential that could take your economy somewhat from agriculture. But, of course, that is your business.

I want to question Mr. Barnard again about this 35,000 acre-feet of water which would be made available to oil shale.

What kind of a priority would that have?

Mr. BARNARD. The same as the other, exactly the same. It is a part of the same priority.

Mr. HOSMER. If your farmers wanted to use that water to irrigate, they could certainly take it away from this kind of a use, couldn't they?

Mr. BARNARD. The answer is, Mr. Hosmer, you have to be guided by what the physical is, and the 35,000 acre-feet will irrigate all of the land that is available for irrigation.

Mr. HOSMER. Mr. Barnard, you state here that it is not an exaggeration to say that the future safety, welfare, and existence of the United States depends on the inexhaustible supply of oil now locked up in the shale beds in La Grande Valley in Colorado.

Mr. BARNARD. That is right.

Mr. HOSMER. Have you really made a serious study on which to base that statement?

Mr. BARNARD. Not an independent study. I base that statement on conversations I have had with those who have made a very thorough and complete study of the situation, including the engineers and technicians of the U.S. Navy. They have directed their studies to the end of determining how important that oil-shale deposit is or might be to the national defense.

Mr. HOSMER. That is really in the nature of an opinion rather than a statement of fact, is it not?

Mr. BARNARD. I think I stated it as an opinion.

Mr. HOSMER. I think you mentioned, Mr. Barnard, that this Gunnison project is out of the way. Do you base that upon these legal decisions with regard to water?

Mr. BARNARD. Unless the State of Colorado revises its irrigation code, Mr. Hosmer, and amends its constitution, I think that statement is accurate.

Mr. HOSMER. Do you feel that way, too, Mr. Brown?

Mr. BROWN. Yes, sir. I live in that area, sir.

Mr. HOSMER. Mr. Smith?

Mr. SMITH. Yes, sir.

Mr. HOSMER. Mr. Brown, you stated that the Federal-State agencies have spent approximately $1½ million on investigation and promotion of this project.

Would you estimate what proportion of that money went to investigate and what proportion of it went to promotion?

Mr. BROWN. No, I couldn't tell you about the promotion. I know that southeastern Colorado spent considerable money on it. I do not have their figures. I take these figures, though, from the official records of about a million dollars by the Federal Government and the rest by the State and the southeastern portion.

Mr. HOSMER. How much of the Federal money went to promote the Federal project?

Mr. BROWN. That would all be investigation money.

Mr. HOSMER. What?

Mr. BROWN. The Federal money would all be on the investigation work and the Bureau of Reclamation investigation.

Mr. HOSMER. I don't know about that, because the last time we held hearings on that they produced a brochure that was put out at the Federal taxpayers' expense promoting this project.

Maybe Mr. Barnard or Mr. Smith knows of some other promotional material.

Mr. BARNARD. I don't know how it was allocated. I do not know what you or Mr. Brown's definition of promotion is.

Mr. HOSMER. Selling a thing to Congress on the west slope.

Mr. BARNARD. Well, there is nothing harmful or that can be objected to in selling something to Congress, I don't think.

Mr. HOSMER. Not when you use the Federal taxpayers' money to do it?

Mr. BARNARD. I don't know whether they used the Federal taxpayers' money to do that or not. I am talking about the southeastern district.

Mr. BROWN. We are taxpayers, Mr. Hosmer.

Mr. HOSMER. So are my people.

Mr. BARNARD. If we can convert losses into a slight profit, Uncle Sam will get its share.

Mr. HOSMER. Well, I think that is a matter of opinion in connection with some of these projects.

Mr. BARNARD. No, it isn't.

Mr. HOSMER. Not this one, of course.

Mr. Brown, I want to ask you, too, about all of this ice and snow that fills up the collection canals on the west slope.

Mr. BROWN. That is an engineering problem. It gets pretty cold up there at 11,000 feet.

Mr. HOSMER. I am just wondering, how about the east slope, where they use that water for producing electricity? How about the ice and snow filling up the canals there and shutting off the power?

Mr. BROWN. After that is gathered, it drops by gravity into the large reservoirs in eastern Colorado.

Mr. HOSMER. The ice or the water, or both?

Mr. BROWN. The water is stored there.

Mr. HOSMER. We had some pretty definite testimony that there would be some interruptions unless you covered these canals the last time. You don't know anything about that other than just what you said now, do you, Mr. Smith?

Mr. SMITH. I am sure that the water supply for the Fryingpan-Arkansas project would enter the conveyance system to the powerplants at somewhat above freezing temperatures, because it would be released from storage. It is my understanding, and I am not an authority on the Fryingpan-Arkansas project, but it is——

Mr. HOSMER. I am not worried about the temperature that it goes in at, but I am worried about the water being clogged with ice, and so forth, so that it will never get there.

Mr. SMITH. It is my understanding, Mr. Hosmer, that the biggest part of those conduits leading to the powerplants are closed conduits.

Mr. HOSMER. They said they were going to be open conduits. What brought it up was the trouble they had on the Big Thompson project.

Well, how about this Ruedi Reservoir, 100,000 acre-feet? How much of that will be dead storage?

Mr. SMITH. There should be about 3,000 acre-feet of dead storage and 100,000 feet of active capacity. That is what the operating principles call for ,the active capacity.

Mr. HOSMER. And you feel an average capacity of 80,000?

Mr. SMITH. An average yield of 70,000 out of that, so far as western Colorado uses are concerned.

Mr. HOSMER. What is the annual evaporation losses going to be at that high altitude?

Mr. SMITH. That reservoir, as I recall, covers approximately 1,000 acres and you could probably assume approximately 2 acre-feet per acre of the average exposed area at that elevation. So I would say that somewhere in the neighborhood of 1,500 acre-feet would probably be the evaporation losses from the reservoir.

Mr. HOSMER. Who is that going to be charged to?

Mr. SMITH. It will be charged to Colorado's share in the Colorado River System.

Mr. HOSMER. It is going to be charged to the east slope?

Mr. SMITH. It would reduce the yield of the reservoir to the western slope.

Mr. HOSMER. Mr. Barnard, I want to ask you this question, as a lawyer. I understand Mr. Brown is a lawyer, too, and I take it that his language is advisedly written in the statement. He says you can now be assured that the possibility of litigation over water rights in connection with this project has been virtually eliminated. What possibility of litigation does remain under this qualified language?

Mr. BARNARD. I understand you are a lawyer, too. So you know and I know that God himself cannot predict what lawyers will kick up in the way of lawsuits. I can't see any possibilities, but there may be some.

Mr. HOSMER. When this first came in here, everybody had their water rights. Then we started to get into the thing and it turned out that the water right situation was just as clear as mud. Then his litigation followed that was supposed to clear it up, but there must be some other possibilities.

Mr. BARNARD. The only possibility of litigation in connection with the water rights and the water rights are as clear as the water in that glass, as clear as they can be made under Colorado law, the only possibility of litigation that I can foresee would be some which might arise over administration, not the water rights themselves. That is always possible.

Mr. HOSMER. You can almost guarantee that we are not buying a pig in a poke as far as water rights are concerned; is that it?

Mr. BROWN. It has been incorporated into a stipulation and decree in the district court of Garfield County which has jurisdiction over that area.

Mr. HOSMER. Mr. Brown, you heard my question respecting this amendment that I had in mind regarding the transmountain diversion. Do you have any different feeling about it than expressed by Mr. Barnard?

Mr. BROWN. Mr. Hosmer, I haven't given enough thought to that to say. We, of course, feel that if we are to develop and if we are to meet our commitments to the lower basin States, that eventually some type of limitation is going to have to be made. We don't say that it

necessarily has to be in this particular bill, but whether it is in this or by separating legislation, because there are many interests. You can't attach it to a federally financed project and say that private individuals or private municipalities would be limited by an act of Congress. I am familiar with the provision that you read. Possibly as a separate bill it might be desirable. But I haven't tried to work out the impact within my own State.

Mr. HOSMER. This question refers specifically to an amendment within this bill, and we recited the fact of Mr. Barnard's assurance that you could not exceed this 20 percent transmountain diversion anyway, and so I asked him "Well, wouldn't you be charitable to us and let us put this amendment in here so we wouldn't have to depend on Colorado not changing its constitution?" And so on.

Mr. BROWN. Are you construing his statement to mean that it is physically impossible to divert more than 20 percent?

Mr. HOSMER. I was construing his statement to me that it was legally impossible.

Mr. BROWN. No, it isn't physically or legally impossible to divert more than 20 percent.

Mr. HOSMER. So we face, notwithstanding these constitutional and court provisions of Colorado, the possibility of additional projects some place being constructed to increase the transmountain diversions.

Mr. BROWN. There are those possibilities and they are being studied, sir.

Mr. HOSMER. Do you think it is fair for a downstream user concerned with the quality of the water, the only water that it receives, to be concerned about diversions which would deteriorate the water?

Mr. BROWN. Sir, there are records kept of the quality of the water from the time it leaves the high water levels in the State of Colorado until it reaches the area below Hoover Dam, which I think show increasing pollution all the way down, particularly with mineral salts that are gathered in the use of the water for irrigation in the upper basin. But I am not pretending to know what those answers are.

Mr. HOSMER. My question was if it was legitimate for such a downstream user to worry about the quality of his water, and I think the answer is obviously "yes."

Mr. BROWN. Well, 69,000 acre-feet or 70,000 acre-feet or 600,000 acre-feet out of 15 million acre-feet—I don't know that it makes too much difference.

Mr. HOSMER. But that is on top of the present diversions and in contemplation of possible future diversions. If it does not stop some place the quality of the downstream water is going to be so deteriorated that it is not usable. That is a fact, is it not?

Mr. BROWN. We understand what you are talking about, sir.

Mr. HOSMER. I am asking you. You come here from the Colorado River Water Conservation District. I ask you if you would have any objection to an amendment to the bill along the lines that I have outlined.

Mr. BROWN. Only in this way, if that amendment is put on, in our opinion, the bill will not carry.

Mr. HOSMER. Why?

Mr. BROWN. Even in our own State.

Mr. HOSMER. Then there are apparently serious considerations in your own State for additional diversions to be made?

Mr. BROWN. Yes, sir. We live in different parts of the State, just like there are two parts of California.

Mr. HOSMER. Diversions which in total would exceed this 20 percent.

Mr. BROWN. There is a difference of opinion on that, and an honest difference of opinion.

Mr. HOSMER. Mr. Brown, I am trying to make it possible for me to be for this project. I haven't really got into the shaky power features of the project, I have not really got into this iced up canal business, and the meager amount of water, a half-foot per acre that it will supply, and I haven't drilled on the surplus crops, the shaky cost-benefit figures of the plan that is before us. I haven't gone into the ability of the irrigators to pay the load. I haven't objected to the interest rate, the objectionable interest rate subsidy clauses of the bill, and a lot of other things. I haven't brought up the fact that the turbines and so forth might be bought in foreign countries. I am trying to be for this project. I have a great deal of respect, and I want to congratulate you people on the east slope for sending us such a fine man as Congressman Aspinall.

Mr. BROWN. He is the west slope.

Mr. HOSMER. The west slope. And I want to congratulate the people on the east slope for sending such a fine gentleman as Judge Chenoweth to work with. I want to be for their project, and I could be with this project if, in so doing, I could make sure that my people eventually will not be subject to having something that is wet, dirty, polluted, deterioriated, impossible to use, coming down the Colorado River. I don't think that is an unreasonable position. I hope and I would wish, since you people and the people on the other side of the slope have given us this, that you might consider our problems and give a little bit here and we will both give a little bit.

Mr. BARNARD. May I comment on your statement?

Mr. HOSMER. Go ahead.

Mr. BARNARD. Mr. Hosmer, we in western Colorado are, I am sure, more concerned with limiting transmountain diversions than is southern California. Further, we are very much concerned about the quality of water left in the river because of this fact, which perhaps has escaped your attention: The water we are talking about comes from the main stem of the Colorado River. The use of that water in irrigation in, for example, the Umcompaghre Valley, increases the saline content of that water to the extent that when it reaches Grand Junction it is not too good water. When it reaches you, and I am not minimizing the quality of water argument at all, it has been diluted with the water of the Green, the Yampa, the White, the Dolores, and the San Juan, so that the quality of water which reaches you is far better than the quality of water that passes the city of Grand Junction. But we are concerned with the same problems. What we are doing and what we are continuing to do is to attempt to impose a limitation on any transmountain diversions, as I said a moment ago, within the framework of our State law.

We have it pretty well in hand, but not entirely. There are still possibilities which we fear, but we are trying to cope with them. We are rather proceeding on the theory—I heard an old fellow say one

time, "If God will protect me from my friends, I will take care of my own enemies."

We are attempting to follow that through. I want to repeat what I said, and this is my personal observations, you understand, though I think it would be concurred in by the board of directors in my district, that if some legislative limitation could be imposed upon those transmountain diversions which would not preclude the approval of an act which we think will be very beneficial to western Colorado, then that would present a different picture than the one we face. I am fearful that if it were included as an amendment to the act, it would prevent the passage of that act, and we want it adopted.

Mr. HOSMER. Do you mean the Colorado people would vote against it?

Mr. BARNARD. I can't predict what they would do. I can guess with you, if you want me to, that the boys on the other side of the hill might.

Mr. HOSMER. I would hope that without the provision the bill would be defeated.

I think you underestimate me, Mr. Barnard. I have a sympathy and an understanding of your pollution problems there. That is at Grand Junction and elsewhere on the west slope. So you take care of it from your standpoint, and the Arkansas River diversion, but how about other diversions elsewhere. That is what I am worried about. You can plug this hole but that is the only hole we are worried about. We are worried about other holes.

Mr. BARNARD. We are more worried about the other holes than you are. We are plugging them up as fast as we can. We are more worried about that transmountain diversion than California is.

Mr. HOSMER. Then I imagine you must be in a rather frantic state about it, but you tell me that you have taken care of it.

Mr. BARNARD. No; I said we are taking care of it. The principal one that we feared the most of any has been taken care of.

Mr. HOSMER. I think that is all.

Mr. ASPINALL. The gentleman from New Mexico.

Mr. MORRIS of New Mexico. You are an engineer, Mr. Smith?

Mr. SMITH. Yes, sir.

Mr. MORRIS. A hydrologist?

Mr. SMITH. I have worked as a hydrologist.

Mr. MORRIS. The gentleman from California is concerned about the water quality when it gets to California, and I certainly do not blame him for that. Let's compare the uses of water. When you have a transmountain diversion, you divert the water and the salt in the water or the impurities and hardness that is in that water. Am I not correct?

Mr. SMITH. Yes, sir.

Mr. MORRIS. Let's compare a diversion with other uses that might take place within a basin, for instance irrigation. Suppose you compare the 69,000 acre-feet of water to be diverted with using it within the basin for irrigation.

Isn't it true that when you irrigate, use water for irrigation, you must return, or eventually return, the salts back to the residual flow of the river?

Mr. SMITH. Yes, sir.

Mr. MORRIS. Otherwise, the land would become clogged with salts and be nonproductive in nature.

Mr. SMITH. That is right.

Mr. MORRIS. This is an engineering fact; is that not correct?

Mr. SMITH. That is correct.

Mr. MORRIS. Also I think the obvious follows, that as far as California is concerned, and as far as the quality of their water is concerned, it would be of benefit in California to have a transmountain diversion project instead of an irrigation project within that basin.

Mr. HOSMER. Will the gentleman yield?

Mr. MORRIS. I will be happy to yield.

Mr. HOSMER. I really hope the gentleman was not serious in what he said, it is like the man who beats himself on the head with a hammer because it feels so good when he stops.

Mr. MORRIS. That has nothing to do with it.

You just heard the testimony of Mr. Smith, who is an engineer, who is a hydrologist.

Mr. HOSMER. Mr. Smith, do you want to qualify that answer?

Mr. SMITH. I might say this, that I can understand California's concern about the quality of water, but I believe Mr. Barnard mentioned to you that during the late season, the waters of the Gunnison River in the vicinity of Grand Junction became fairly rich with dissolved solids. In fact, the quality of water supply studies compiled by the U.S. Geological Survey will show that they go up to as much as 2,000 parts per million of dissolved solids in the late season.

We are making use of that water without wrecking the land. We would rather have better quality water, but, certainly California being able to equate their water through the system of reservoirs that either have been constructed or will be constructed on the Colorado River, they mix high water year flows with low water years flows, and they have an equated dissolved solid. They don't have to worry about it being rich one time and lean another. They have a rather constant supply. It is polluted to some extent.

Mr. HOSMER. In other words, you withhold the water for these reservoirs at the time, or divert them at a time, when there is a high volume of water.

Mr. SMITH. Yes, sir.

Mr. HOSMER. And, therefore, if allowed to flow and continue down they would have a flushing, diluting effect.

Mr. SMITH. That is right. And this rich water coming into there during the low years would be diluted in concentration.

Mr. HOSMER. But that rich water is at a low volume period of flow.

Mr. SMITH. Sir?

Mr. HOSMER. That rich water is a relatively lower flow volume.

Mr. SMITH. It is at a fairly low stage, but when you figure that you have maybe anywhere on an average of 10 to 20 years of water stored in this reservoir system, runoff stored in the system, I don't think you could assume that those reservoirs would be empty.

Mr. HOSMER. But there is no doubt that if you take 69,000 acre-feet of high altitude, relatively pure water and divert it, it does not become available as a dilution factor downstream.

Mr. BROWN. May I make a statement there, Mr. Chairman.

You talk about 69,000 acre-feet of pure water being diverted. May I point out this, that the 100,000 acre-feet that will be placed in the

Ruedi during that time will be settled water. It will come to you through a controlled stream. That same 70,000 or 100,000 acre-feet that ordinarily goes off in the flood season in the springtime simply carries mud, silt, and everything else to fill up Lake Mead and the rest of the reservoirs down below. But that Ruedi Reservoir water will be high-quality water. It is just below the snow banks. It will be stored there and will be released then during the summer when it is most needed.

Mr. HOSMER. I think we are making a distinction between dissolved and nondissolved solids. Is that right, Mr. Smith?

Mr. BROWN. There is a difference, I know that, too, but that mud that we see going by our place every spring we hope on our river will be up in Curecanti, where it won't come down there and just flow mud on down to the Colorado and thence to Lake Mead. It is our feeling that all future development of the water has to be reservoir. That is one of the facts that appeals to us in this particular project, that a substantial reservoir is being placed where it can be used by Colorado and sent below.

Mr. HOSMER. As I tried to point out, the only thing we are worried about is a total amount of diversion reaching a point where there is insufficient water to dissolve or to dilute the dissolved solids up to a minimum usable point.

Mr. MORRIS. Mr. Smith, I would like to ask you another question. We got involved in a lot of other things in the discussion on the quality of water.

Let's put forth three assumptions. Let's first assume that this water is not put to beneficial use within Colorado, that it goes on down the river and ends up in California. Then let's make this assumption, that 69,000 acre-feet which is under consideration to be diverted here is used within the western slopes and not diverted. Then let's put forth the assumption that 69,000 acre-feet is diverted.

As an engineer, in your opinion how would these three conditions affect the water in the State of California?

Mr. SMITH. Well, the first condition would naturally result in the least pollution of the water.

Mr. MORRIS. That would be the condition, naturally, which California would rather have.

Mr. SMITH. If the water were used for irrigation in western Colorado it would depend on the type of soil it was used for as to how much pollution resulted from it, but, in my opinion, it would probably result in greater pollution to the remaining water in the Colorado River than would occur if the water were taken in transmountain diversion.

Mr. MORRIS. That is all.

Mr. Chairman, I might point out one thing. This is the second qualified hydrologist that this committee has heard testimony on this problem of water, and they both said the same thing.

Mr. HOSMER. I would like to point out one thing also. In talking about the quantity of water, he is talking about 69,000 acre-feet. He is not talking about total basin available water supply.

Mr. MORRIS. I was only speaking in this instance of 69,000 acre-feet, but percentagewise it would be the same thing. If you are considering diversions totalling 350,000 acre-feet and consumptive use

within the basins without diversions being 350,000 acre-feet, the percentages would be the same.

Mr. HOSMER. The gentleman forgets, however, that the relationship is not linear because that assumption is putting it on the ground and acquiring dissolved solids but not acquiring 350,000 feet.

I would like to point out to the gentleman that the Department of the Interior has been requested and has been ordered to make these studies and it has accepted the studies on the basis that there is a quality problem from the transmountain diversions. I really think that there is no question about it being a serious problem. It underlies the witnesses' expressed fears of their own relative to transmountain diversions.

Mr. ASPINALL. Would the gentleman yield to the chairman?

The chairman would like to ask this question of the gentleman from California: Which situation would the gentleman from California rather have so far as the purity of the water is concerned when it is delivered to California; that the total amount of Colorado's share of water, which is 3 million and some hundred thousand acre-feet, would be entirely diverted and not used at all in western Colorado, or that it would all be used in western Colorado and none of it diverted?

Mr. HOSMER. You mean entirely beneficiary for consumption uses for agricultural purposes?

Mr. ASPINALL. Yes.

Mr. HOSMER. Well, the gentleman has just asked me a trick question that I am not going to answer.

Mr. ASPINALL. I was inclined to be on the gentleman's side this morning, but I have had some more information given to me since this morning's session, and I believe there are two sides of this question. I do not know where I am right now.

Mr. HOSMER. The gentleman well knows that the total of 3(a) water up in Colorado probably can not be entirely consumptively used on the west slope, and I think that is the basis of his question, and it therefore provides a dilution factor. I don't think there is anybody who is kidding anybody when they say that that is not behind the situation, and I also do not think that anybody is kidding anybody when they say that this transmountain diversion feature was not anticipated at the time of the compact.

Mr. CHENOWETH. After this most classical and illuminating dissertation on the quality of water this afternoon, I can come to only one conclusion, which is that the State of California likes Colorado water even though it may be a little polluted.

Mr. HOSMER. We may not like it but we will take it.

Mr. CHENOWETH. I have just a few questions.

Mr. Brown, I am delighted to see you here, not only as president of the Colorado River Water Conservation District, but also as an old personal friend. How long have you practiced law, Mr. Brown?

Mr. BROWN. Twenty-nine years 1 month from today.

Mr. CHENOWETH. And that has been largely in water practice, has it not, on the western slope?

Mr. BROWN. To a considerable extent, yes.

Mr. CHENOWETH. How many members on your board are lawyers?

Mr. BROWN. I believe six are lawyers.

Mr. CHENOWETH. And Mr. Barnard is your counsel?

Mr. BROWN. He is our counsel, yes.

Mr. CHENOWETH. And there are six lawyers on the board in addition to him?

Mr. BROWN. Yes.

Mr. CHENOWETH. There would be seven lawyers, then, who participated in the discussion of this project?

Mr. BROWN. Yes. Then we have seven other members.

Mr. CHENOWETH. Would you say that most of these lawyers are familiar with water practice, and water rights, and are eager and zealous to protect the water rights of the western slope water users?

Mr. BROWN. If they were not, they wouldn't be on the board.

Mr. CHENOWETH. And you mentioned that the board overwhelmingly approved the Fryingpan-Arkansas project?

Mr. BROWN. Yes, sir.

Mr. CHENOWETH. That would not leave much room for doubt, would it, as to what the attitude of the board was?

Mr. BROWN. No. That is our position on it.

Mr. CHENOWETH. There couldn't be much apprehension then that this project was going to take away their water rights on the western slope, but on the contrary they feel these rights are fully protected in this project.

Mr. BROWN. That is right.

Mr. CHENOWETH. I want to congratulate you, Mr. Brown, Mr. Smith, and Mr. Barnard, on your participation in these deliberations and negotiations over a long period of years. I know that there were times when there were rather tense feelings. All of you deserve great credit for the fact that you have been able to resolve these differences in Colorado and have now reached this agreement.

Do you think there is anything unreasonable, Mr. Brown, in the State of Colorado asking to use 70,000 acre-feet out of almost 4 million acre-feet allocated to the State of Colorado under the Upper Colorado River Compact, and put this water to beneficial use in the State of Colorado? Do you know why any other State should object to this project? I wonder if your Board considered all of the objections which have been made.

Mr. BROWN. I feel this way about it, that we are in an agricultural area ourselves. We know the value of that small amount of supplemental water which would bring a crop to maturity which would otherwise wither and die along in August and September. Our orchards are based and dependent upon stored water to keep them alive and producing. There is a point where a small amount of water in addition to what may already be in the stream will do three times as much good as if it were just a part of that stream and overappropriated as most of those streams are. It is supplemental water that we are looking for in our area, too, and participating in storage projects to bring the water to us when we need it and still keep it going on down the river.

Mr. CHENOWETH. As one who has sponsored this project in Congress since its inception, and on behalf of the water users of the Arkansas Valley, I commend you and the other members of your Board on your fine cooperation in reaching this agreement.

Mr. Barnard, you have been before the committee several times on this project.

Mr. BARNARD. Yes, sir.

Mr. CHENOWETH. We are glad to have you on our side. You have always been a very worthy foe. We prefer to have you on our side. While you now reside on the western slope and your interests are there, I cannot forget that for many years you were one of our most prominent lawyers on the east slope, and I still like to think of you as belonging to Pueblo. There has always been the greatest respect, admiration, and affection for you on the part of our people. I speak not only for myself but for many others.

Mr. BARNARD. Thank you, Judge.

Mr. CHENOWETH. I liked the way you responded to the questioning of Mr. Hosmer, of California. You feel the rights of the western slope are protected in this project, and you feel that this is a project which is for the best interests of the State of Colorado.

Mr. BARNARD. Let me make it clear, Judge, not only to you but to those here, that I am completely selfish in my viewing this project. It does something for western Colorado that we have tried to accomplish. Whether or not we could accomplish it without this project, I don't know; but in view of the fact that it does provide for western Colorado development that is badly needed, in addition to providing supplemental water in the Arkansas Valley, I will say yes, it is for the best interests of California.

Mr. CHENOWETH. We appreciate the solicitude and concern which my good friend from California has expressed over this project. I can see he wanted to be absolutely sure that you were satisfied with this project. That is why he was so meticulous in these questions that he asked you this afternoon. He wanted to make absolutely certain that you were satisfied with it. Now that he has this information, I hope he will support the project.

Mr. HOSMER. How much will this additional Basalt project involve?

Mr. SMITH. How much would the Basalt project involve in cost?

Mr. HOSMER. Yes.

Mr. SMITH. About $10 million for the water delivery facilities and half of that $3 million unpaid balance, or $1.5 million for storage. So it would be about $11.5 million.

Mr. HOSMER. I hope the chairman might offer an amendment to put that in.

Mr. CHENOWETH. That is all. Thank you very much.

Mr. ASPINALL. Thank you very much gentlemen. That was a fine presentation.

At this time the Chair would like to call as a witness Mr. James T. McBroom.

May the Chair state his desire and his plan to close the meeting soon after a quarter after 4.

STATEMENT OF JAMES T. McBROOM, CHIEF, BRANCH OF RIVER BASIN STUDIES, SPORT FISHERIES AND WILDLIFE, FISH AND WILDLIFE SERVICE; ACCOMPANIED BY WILLIAM M. WHITE, ASSISTANT CHIEF; WALTER D. RAY, FISHERY BIOLOGIST; AND ROBERT N. RANDALL, WILDLIFE BIOLOGIST, BISMARCK, N. DAK.

Mr. MCBROOM. Mr. Chairman, I am accompanied by Mr. William M. White, the Assistant Chief of the Branch of River Basin Studies. Also in the room are Mr. Walter Ray, fishery biologist, and Mr. Robert Randall, wildlife biologist from Bismarck, N. Dak.

Mr. Chairman, I have this statement which I would like to present, and if it please the committee, I would then like to present a few general statements on the subject of fish and wildlife evaluation and cost allocation which are designed to dispel some of the problems which this committee has faced in considering this matter.

The areas to be affected by the project are of great importance to Colorado's fish and wildlife resources. The western slope waters support excellent trout fisheries, and the Arkansas River upstream from Canon City is improving in quality and has a good potential as a "big stream" trout fishery.

Important big game herds are present on both the western and eastern slopes. The irrigated area of the Arkansas Valley has fair to good populations of upland game and waterfowl. The mountain streams in particular provide habitat for mink, muskrat, and beaver, which also occur on the Great Plains east of Pueblo.

West slope: In that part of the project area lying west of the Continental Divide, the Roaring Fork-Fryingpan Rivers support a valuable trout fishery. As a result of recommendations made by the Fish and Wildlife Service, in cooperation with the Colorado State Game and Fish Commission, plans for construction and operation of the west slope portion of this project have been modified insofar as practicable in order to protect these fishery resources.

The modifications include enlarging the west slope collection system and the transmountain tunnel. These facilities will permit a greater diversion of water for use by the Twin Lakes Reservoir & Canal Co. on the east slope.

In turn, this will permit specified minimum flows to pass the company's diversion dams on the Roaring Fork. With these flows, as well as those to be provided in streams of the Fryingpan system to be affected by project diversions, maintenance of the fishery of the Roaring Fork-Fryingpan Rivers will be assured.

I would like to say that these standards which were developed with the Colorado Game and Fish Department were presented to the State group working out the operating principles. The operating principles include in two or three articles on minimum flow specified for the Roaring Fork and Fryingpan Rivers. This was our principal role in the planning of the project.

Based on those operating principles, the Bureau of Reclamation then proceeded to design the extension of the collection system and the other features necessary to assure those flows.

Wildlife on the west slope will be detrimentally affected by destruction of habitat in the Ruedi Reservoir area and canal rights-of-way. Opportunities for preventing this damage are few. Although canals may constitute no barrier to big-game migrations, foot bridges should be provided across these canals where needed to permit access to the area by hunters thereby facilitating the harvest of big game.

East slope: The upper Arkansas River and headwater tributaries are considered to have great potential value for fishing. Flow modifications resulting from diversions and powerhouse releases might impair the upper Arkansas River as a trout stream unless adequate provision is made for stream flows as on the west slope.

If these flows are reduced too far, the effects of pollution will be increased, water temperatures will be raised, and invasion of the stream by undesirable aquatic plants would probably occur.

Minimum streamflows to be recommended by the Fish and Wildlife Service will, if followed, maintain the present fishery. Diversion of polluted water may impair the fishery value of Twin Lakes Reservoir and of Clear Creek Reservoir.

Losses to wildlife on the east slope will be similar to those anticipated for the west slope. Detrimental effects of the Arkansas power canal, which will be a barrier to big-game migration, could be minimized by providing bridges for these animals and by fencing both sides of the canal.

This has been done with some success on the Talant division of the Rogue River project in Oregon. This is a reclamation project, too.

There are no benefits to fish and wildlife from any of the works of this project except the Ruedi Reservoir. The other project works will not improve on fish and wildlife habitat as it exists in nature. Any allocations of costs to fish and wildlife on these works would, therefore, consist only of the estimated construction costs of measures incorporated in project plans to mitigate damage to fish and wildlife or to compensate for such damage.

I have already discussed as to how that allocation was arrived at, it being an estimate prepared solely by the Bureau of Reclamation for facilities to protect the fishery on the west slope. As has been testified previously in this hearing, that allocation is $2,081,000.

Also, no part of the joint costs is allocated to fish and wildlife on these works other than Ruedi.

Ruedi Reservoir: With respect to Ruedi Reservoir, our studies indicate a net increase in fishery values with the construction of this feature of $172,000 per year. This was computed by making allowance for a $60,000 loss of fishery values in the Fryingpan River within the reservoir area; adding a $7,000 gain for that river below the reservoir area (where the stream fishery will benefit to some degree by improved river regulation); and considering $225,000 as the annual value of the fishery of the Ruedi Reservoir itself.

Effects of Ruedi Reservoir on big game and upland game will be insignificant. However, the inundation of three small private lakes and their adjacent wetlands will eliminate populations of waterfowl and aquatic fur animals—including muskrats—of local importance, the production of which will be much less with a fluctuating reservoir.

Under the Fish and Wildlife Coordination Act, the Fish and Wildlife Service is cooperating closely with the Bureau of Reclamation and the Colorado Fish and Game Department in the final development of plans for the Fryingpan-Arkansas project.

We are confident that these final plans will satisfactorily protect the fish and wildlife resources of the project area. We have already arrived at such satisfactory plans for the west slope facilities, and no doubt we can do so for the remainder of the project.

We support the authorization and construction of this project.

Now, if it please the committee, Mr. Chairman, I should like to present these few general statements on the subject of evaluation and cost allocation.

First I should like to address myself to the subject of benefits. These statements are classified as first speaking only of benefits and second speaking only of cost allocations.

Mr. ASPINALL. You mean given priorities. You don't mean that we cannot use them.

Mr. McBroom. They are two different things and I propose to address myself to them under two different headings.

Mr. Aspinall. We are leery these days about top secret, confidential and all of that.

Mr. McBroom. Yes, sir.

With respect to benefits, then, (1) uniform procedures for the evaluation of benefits are utilized on all projects. All benefit evaluations of every kind are based on judgment, whether the benefits are those ascribed to irrigation, flood control, hydroelectric power or fish and wildlife.

This point is emphasized in the letter from the Secretary of the Interior to the chairman of the full committee dated November 10, 1959.

(2) There is no general rule which applies to all projects in the evaluation of fish and wildlife benefits. Every project is different from this standpoint, even unique.

(3) On some projects there are no fish and wildlife benefits at all because project works may destroy more fish and wildlife values than they create.

(4) In other project areas there may be an abundance of opportunities for fishing and hunting provided by nature. These would be in competition with those provided by the project. Since the evaluation of benefits is based on a measure of expected human use, and the increase in that use, for fishing and hunting, for which opportunities are created by a project, such projects, of course, would have less evaluated benefits than several like some of these on the Great Plains, where relatively few opportunities exist in nature for fishing activity or hunting activity in the project area.

(5) From these points it will be clear that there is no general straight-line relationship between size and cost of a project and its fish and wildlife benefits. A large and expensive project may have no fish and wildlife benefits. On the other hand, a project moderate in size and cost may have substantial fish and wildlife benefits.

Now I would like to move on to the second part of this group of statements, and these have to do with cost allocations only.

First, allocations of cost are accomplished solely by the project construction and planning agency. The Fish and Wildlife Service has nothing whatsoever directly to do with cost allocation.

(2) Under the separable cost-remaining benefits method, the cost allocation to fish and wildlife depends largely on the relationship of the evaluated fish and wildlife benefits to the total value of all benefits from all purposes.

(3) Consequently, the benefits to fish and wildlife bear no straight-line relationship to the cost allocation to that purpose. That is, what seems to be a large figure for fish and wildlife benefits may result in what seems to be a small fish and wildlife allocation, and vice versa.

As stated, this depends very largely on a relationship of the fish and wildlife benefits to the total of all benefits from all purposes.

(4) The investigations by the Fish and Wildlife Service and the evaluation of project fish and wildlife benefits are normally made far in advance of knowledge by Fish and Wildlife Service personnel of project costs or cost allocation. Consequently, there can be no pos-

sibility of adjustment of fish and wildlife benefits to fit any particular cost allocation requirement.

(5) It has been recommended that only separable or added costs, not joint costs, be allocated to fish and wildlife. This means only the incremental cost of adding facilities specifically for fish and wildlife would be allocated to that purpose; not any part or share of the cost of facilities like dams and reservoirs which serve fish and wildlife conservation jointly with other purposes. However, section 2(f) of the Fish and Wildlife Coordination Act expressly authorizes the allocation of joint costs to fish and wildlife.

Mr. Chairman, that concludes the group of statements. I have the excerpt from the Fish and Wildlife Coordination Act, section 2(f), which I can supply for the record, if you desire it, and also a copy of the letter of November 10, 1959, to you from the Secretary of the Interior, to which reference was made.

Mr. ASPINALL. We already have those last two documents. There is no necessity of putting them into this record of this hearing. We are glad to have your general statement in the record at this place.

I will be glad to recognize the chairman of the committee who usually waits until the last to ask his questions, but who will now have a priority.

Mr. ROGERS. Mr. McBroom, in reading those statements, did I hear you right in the first statement that you said there was a uniform plan or rule or regulation that was used to determine all of these fish and wildlife allocations?

Mr. MCBROOM. No, sir. I was speaking only of benefits. I said there were uniform procedures used in arriving at the benefit evaluations.

Mr. ROGERS. Didn't you say further down there that there couldn't be any uniform, or did the Secretary say, way in determining the final allocations?

Mr. MCBROOM. The final allocations, which are made entirely by the Bureau of Reclamation, as I say, depend on the relationship of the benefits to fish and wildlife to the total of all benefits from all purposes.

Mr. ROGERS. Although it seems to me that the statements you read from the Secretary were conflicting in several situations, according to the way you want to interpret them, as a matter of fact, they remind me very much of the President's statement that the Federal Government should do only for the people that which they cannot do for themselves.

I believe it was spoken by President Lincoln. That is a rather Mother Hubbard statement. You can translate it getting entirely into socialism or you can get entirely outside. It depends on who is interpreting the statement.

Do I understand the fish and wildlife benefits on this project were determined by the same basic methods as the fish and wildlife benefits on, we will say, the Norman project, which is rather recent?

Mr. MCBROOM. Yes, sir; but there are no fish and wildlife benefits on this project except at the Ruedi Reservoir, and those benefits there were determined in the same way as the benefits were determined on Norman, of which you spoke.

Mr. ROGERS. Do I understand, then, that the reason there are no other benefits on this, such as would be forthcoming in the mid-States

project or in the Norman project, is because there are certain activities in hunting and fishing that have been going on in this area for a long time and, therefore, there would be no appreciable increase in them and, therefore, there would be no benefit?

Mr. McBroom. Exactly. Furthermore, the project, as it was designed, other than Ruedi, without these mitigating measures which I have mentioned, would be harmful to fish and wildlife. But these extra measures which account for the allocation of $2,081,000 were placed in the project plan by the Bureau of Reclamation to mitigate what otherwise would have been losses to the fishery of the Roaring Fork and Fryingpan Rivers.

Mr. Rogers. What about your statement in the first part, where you say that the Arkansas River upstream from Canon City is improving in quality and has good potential as a big-stream trout fishery.

Do I understand that that potential doesn't flow from anything finding its origin in this project at all, but is just a natural situation that has developed?

Mr. McBroom. You are absolutely right, sir.

Mr. Rogers. I wondered why that statement was in here if it had nothing to do with the benefits from this project.

Mr. McBroom. The upper Arkansas River will be affected by the diversions made on the east slope by the project works here contemplated. So it is involved. The Arkansas River fishery, as it now exists, is involved in this project and affected by it.

It is going to be our job, working with the Colorado Game and Fish Commission and the Bureau of Reclamation, to be smart enough to plan certain modifications in the Arkansas side of this project so as to protect that good Arkansas stream fishery. That is why the statement was put in there.

Mr. Rogers. To get this thing a little clearer in my mind, if you build a project of this kind, we will say the Ruedi Reservoir, and it is treated with your formula that you have outlined before the committee before, and shows so many man-days that can be translated into dollars and cents that will be in addition to the man-days of sportsmanship that we had before, then the grant of the Federal Government will be measured by that amount?

Mr. McBroom. That would be the measure of the annual benefits. That is only the starting point, Mr. Rogers, before they proceed to run it through the separable costs-remaining benefits allocation method.

Mr. Rogers. That is done by the Bureau of Reclamation?

Mr. McBroom. Yes, sir; entirely.

Mr. Rogers. Let's stay in fish and wildlife for a minute.

Suppose you put in a dam on a river where there had been wonderful fishing and the operation of the project works were such that it would destroy the fishing. Do people get paid for that, too?

Mr. McBroom. There would be no benefits there, and no allocation of joint project costs to fish and wildlife in such a case. It is possible that there would be some kind of mitigating measures put in to compensate for that loss, such as a fish hatchery. Under the Fish and Wildlife Coordination Act the cost of that fish hatchery could be allocated to fish and wildlife purposes.

Mr. ROGERS. No. I am talking about this: That as far as fish and wildlife are concerned, if you jeopardize or damage the fish and wildlife in a certain area by virtue of a dam or a project that would be put in there, would anything be charged as a grant to the Government because of the damage that was done?

Mr. MCBROOM. None whatsoever.

Mr. ROGERS. They do not get anything?

Mr. MCBROOM. Nothing whatsoever.

Mr. ROGERS. They only get the benefits plus the money from the Government that those benefits amount to?

Mr. MCBROOM. They would get no nonreimbursible allocation, again qualifying it, Mr. Rogers. If there were to be a mitigating measure put into that project such as a fish hatchery, under the law its cost could be allocated on a nonreimbursable basis, and that has been done.

Mr. ROGERS. But you could turn that around and say that putting in a fish hatchery was a benefit, separate and apart from the other.

Mr. MCBROOM. We do not. We do not recognize any benefit or any allocation of joint costs in such an example.

Mr. ROGERS. And the same thing is true with relation to wildlife?

Mr. MCBROOM. Yes, sir.

Mr. ROGERS. If you destroy wildlife you do not pay for it?

Mr. MCBROOM. If wildlife is destroyed by the project, there are no benefits, which can be used in the allocation.

Mr. ROGERS. I am asking if you have a method where you pay for the situation in a way such as a grant, as a nonreimbursible part of the project because you did destroy some wildlife?

Mr. MCBROOM. Yes, sir. The costs of preventing damage or the costs of mitigating damage might come under that category. That would be in the same type of thing as the fish hatchery I mentioned.

Mr. ROGERS. Suppose you used your formula in reverse: that you put in a project so that certain wildlife and fish were destroyed or the hunting of them or the fishing thereof was so jeopardized that it would reduce by 50 percent the number of man-days that had been devoted to sportsmanship prior to this project.

Do you give the people in that area credit insofar as the cost of the project is concerned on the same formula that you give it to them on benefits?

Mr. MCBROOM. No, sir. We do not evaluate negative benefits.

Mr. ROGERS. How do they get paid for that part of it if they lose it?

Mr. MCBROOM. They don't. They would just have to lose it, unless there can be some kind of mitigating measure adopted for the project to create other values.

Mr. ROGERS. Mr. McBroom, the only thing I cannot get through my head, and I guess I never will, is, are you not giving them double benefits and charging them double penalties in the formula that you are using now?

In other words, if you build a reservoir on a dry stream that just had a floodflow every once in a while, and filled it up and built a reservoir where there wasn't a reservoir, there wasn't any fishing, no wildlife or anything, and then you translate into dollars and cents the amount of sportsman days created by virtue of that reservoir, and you make a grant to those people on the cost of that reservoir, you are giving them not only the benefit of those man-days, and those people coming in and spending money, but you are giving them an

equal amount out of the Federal Treasury for building of the reservoir.

Yet, if there was a reservoir there and you put in a project that destroyed the wildlife, you are not only not paying any of the cost of the project you put in that creates this damage, but you are taking away from those people in that area the business for which they are not being compensated.

That is the thing I cannot get through my head, the double payment and double penalty.

Mr. WHITE. May I comment on that, Mr. Rogers?

Mr. ROGERS. Yes; of course.

Mr. WHITE. We do not evaluate these losses as such, as Mr. McBroom said in this example which you gave, but what we would try to do would be to prevent that type of situation. We try to plan with these construction agencies, the Bureau of Reclamation or the Corps of Engineers, whoever it might be.

Mr. ROGERS. I am not talking about that, Mr. White. I know you try to prevent it and you do. But I am talking the hypothetical case where you were not able to.

Mr. WHITE. If there were no way in which we could compensate for it, we would not evaluate the loss. There would be no Federal grant made.

Mr. ROGERS. If you transferred that into sportsmanship days and it amounted in dollars and cents to $1,500,000, why couldn't you say that amount will be nonreimbursible and you charge that to fish and wildlife, nonreimbursible insofar as the cost of the project is concerned?

Mr. WHITE. Under the separable costs-remaining benefits method of cost allocation, you only allocate to purposes that show a benefit, so there would be no basis to allocate to a purpose that showed only a loss. Of course, what you might do, which we do not do at the present time, is to evaluate these losses in dollars. Then that dollar loss figure could be subtracted from other project benefits.

Mr. ROGERS. But you do evaluate the benefits in dollars?

Mr. WHITE. Yes, sir; to the extent that we feel that these benefits are net over the losses. We take into account benefits and losses both, of course, on the projects.

Mr. ROGERS. If you come up with benefits, the people get a grant; if you come up with a loss, they don't get anything.

Mr. WHITE. That is correct.

Mr. MCBROOM. They do get, as has happened on a number of projects, a mitigating measure.

Mr. ROGERS. What do you mean by mitigating measure?

Mr. MCBROOM. A measure to mitigate the losses, to make up for them, to compensate for them in some respect.

Mr. ROGERS. But that is charged off and simply reduces or increases the benefits. With your mitigating losses, you increase benefits.

Mr. MCBROOM. It has no effect on the benefits, I do not believe, Mr. Rogers. I have in mind the case of a project in California, on the American River, where a dam was constructed and the Bureau of Reclamation also was authorized to build to a fish hatchery and to furnish the funds for financing that fish hatchery.

That was in order to maintain the run of the fish in the American River. This didn't enter into the benefit computations in any way.

The Central Valley project will have the cost of that fish hatchery allocated to fish and wildlife on a nonreimbursable basis.

Mr. ROGERS. On your Ruedi Reservoir, in your statement you say this $172,000 per year feature was computed by making allowance for $60,000 loss of fishery values in the Fryingpan River within the reservoir area.

What did you mean by that?

Mr. MCBROOM. That is the value of the Fryingpan River fishery that is within the reach of the river which will be flooded out by the reservoir.

Mr. ASPINALL. As a trout stream?

Mr. MCBROOM. Yes, sir.

Mr. ROGERS. Then you weighed that loss off and actually added it to benefits?

Mr. MCBROOM. Yes, sir. If you sum up those figures in that paragraph, algebraically, you come out with $172,000 a year. We put a minus $60,000, a plus $7,000, and a plus $225,000, together, to end up with $172,000 a year.

Mr. ROGERS. In other words, you figure $225,000 is what Ruedi Reservoir would have insofar as dollars and cents are concerned in contributing to better fishing?

Mr. MCBROOM. That is what we, by our methods, consider to be the fishery benefit from the Ruedi Reservoir, gross.

Mr. ROGERS. You subtracted $60,000 because you figured that that $60,000 loss on the stream, the Fryingpan River, was replaced by your figure of $225,000?

Mr. MCBROOM. Yes, sir.

Mr. ROGERS. In other words, you are going to make a lake fisherman out of a stream fisherman.

Mr. WHITE. I might say that we do not always do that. In this particular case, we did believe that the reservoir fishery would compensate for the lost stream fishery. Sometimes we do not believe that will be the situation, but it was here.

Mr. ROGERS. Suppose the loss here had been $225,000 on the stream and only $60,000 for Ruedi Reservoir. Where would you be?

Mr. MCBROOM. There would have been no benefits reported to the Bureau of Reclamation and no allocation of costs of the reservoir to fish and wildlife. As it is, the material presented by Mr. Palmer shows that there is a total of $1,757,800 of the cost of Ruedi Reservoir, that part of it which is assigned to the Fryingpan-Arkansas, which is allocated to fish and wildlife.

Mr. ROGERS. Let's stay with the figures in this paragraph. Had those figures been in reverse, then there would have been $172,000 loss. They would have traded a $225,000 fishing privilege for a $60,000 fishing privilege, and would not have had anything to show for that $172,000, not even nonreimbursable costs of the reservoir itself, would they?

Mr. MCBROOM. That is right. In that case, we would have endeavored to find a means of mitigating that loss or compensating for it as we did on the west slope facilities. For the west slope, there were certain recommendations for the preservation of minimum streamflows in the Fryingpan and Roaring Forge Rivers, which are going to cost $2,081,000.

Mr. ROGERS. You said you would find ways of mitigating it. What do you mean, by going in to build a fishery?

Mr. MCBROOM. Well, a fish hatchery would be one way.

Mr. ROGERS. Let's go to the fish hatchery. Would the cost of the fish hatchery be charged to the project?

Mr. MCBROOM. Yes, sir.

Mr. ROGERS. In other words, what you would do would simply be to say "We are going to put in a fish hatchery here to mitigate for this loss. It is going to cost $172,000, and that is not going to cost those people anything, so we just say $225,000 for fish and wildlife and it is even-steven."

Mr. MCBROOM. That is the way it is done under the law. No part of the joint costs of the dam and reservoir would be allocated to fish and wildlife as was the case in Norman and some of these others.

Mr. ROGERS. It would be $172,000, the cost of your fish hatchery. That would have to be allocated to fish and wildlife.

Mr. WHITE. That would be a specific cost and included in total project costs. In effect, it would be increasing project cost and holding benefits the same, so you would be affecting the project cost-benefit ratio slightly.

Mr. ROGERS. And would not be charged off to fish and wildlife?

Mr. MCBROOM. The cost of fish hatchery would be charged to fish and wildlife on a nonreimbursable basis under the law.

Mr. ROGERS. I believe you said in your statements that all of these things are determined, all of these cost allocations, are determined by judgment.

Mr. MCBROOM. Yes sir, that is, the benefit evaluations.

Mr. ROGERS. Of course, everything is done by judgment, but the thing that worries us is the facts and figures upon which you base that judgment. You don't mean that you just reach up into the air and grab a figure out. You have to have some formula or some yardstick upon which to base judgment.

Mr. MCBROOM. Yes, sir.

Mr. ROGERS. Judgment is the approximation from the use of figures pertaining to a particular project?

Mr. MCBROOM. Yes, sir. I did, however, say that all benefit evaluations represented the exercise of judgment rather than all cost allocations.

Mr. ROGERS. Yes.

Mr. MCBROOM. All benefit evaluations, including those in the fields of irrigation, flood control, hydroelectric power, and fish and wildlife. In every instance, people working in those fields exercising their judgment are the ones that develop the benefits which are brought before this committe and other committees as part of the project analysis. We do that, too, and we do it not reaching out of the air. But as we did in the Norman case, we go by what is general in the area for the kind of thing we are trying to do. What do people spend for a day of fishing? So it is not guesswork.

Mr. ROGERS. That is your benefit allocation?

Mr. MCBROOM. The benefit evaluation.

Mr. ROGERS. I suppose those calculations can be mathematically certain, can't they?

Mr. MCBROOM. Yes, sir; that is, the cost allocation calculations can be so made.

Mr. ROGERS. You do not have judgment there.

Mr. MCBROOM. That is right. Once the benefits are determined for all purposes by judgment, then the cost allocation under the procedure is more or less an arithmetic proposition.

Mr. ROGERS. Under that formula, wouldn't it be possible that you could almost reach a 100-percent cost of a project if you dammed up a dry stream, put a reservoir there, and there had never been one there before, if you had enough people in the neighborhood to be coming over there and fishing and hunting?

Mr. MCBROOM. That would be possible. Our agency, the Fish and Wildlife Service, in its program on national wildlife refuges, does in fact build dams wholly for fish and wildlife purposes, under its own programs.

Mr. ROGERS. What I am thinking about is out there in the dry Panhandle. You might have given me some ideas.

Mr. MCBROOM. Those are nonreimbursable, Mr. Rogers. There is no reimbursements called for on those dams built on national wildlife refuges. We are not suggesting that the irrigation program of the country enter that program, too, but certainly we do feel that where there are obvious benefits to fish and wildlife from a reclamation project, full advantage should be taken of that opportunity.

Mr. ROGERS. Thank you, Mr. Chairman.

Mr. ASPINALL. The Congressman from Colorado.

Mr. CHENOWETH. How much have you allocated to fish and wildlife in this project?

Mr. MCBROOM. This project has a total allocation of $3,838,800 allocated to fish and wildlife, but I would like to say, Mr. Chenoweth, it is not our allocation. It is solely that of the Bureau of Reclamation.

Mr. CHENOWETH. You do not agree with that allocation?

Mr. MCBROOM. Yes, sir; but it was made by the Bureau of Reclamation. We furnished the annual benefits on which the allocation of fish and wildlife costs on Ruedi are based. That is $1,757,800.

Mr. CHENOWETH. How much was it for Ruedi?

Mr. MCBROOM. $1,757,800 allocated to fish and wildlife for the Ruedi Reservoir.

Mr. CHENOWETH. What is your total now?

Mr. MCBROOM. $3,838,800.

Mr. CHENOWETH. You had $2,155,000 before.

Mr. MCBROOM. No. There is $2,081,000 on the project exclusive of Ruedi. This represents simply the estimate by the Bureau of Reclamation of the cost of meeting the minimum streamflow standards for fish life in the Roaring Fork and Fryingpan Rivers set forth in the operating principles.

Mr. CHENOWETH. I am looking at the previous figures when Ruedi was not included, and they are $2,155,000. That was in 1957. So you have added $1 million, and more for Ruedi, did you say?

Mr. MCBROOM. My figure, and this is a Reclamation figure, is now $1,757,800, Mr. Chenoweth.

Mr. CHENOWETH. We are not going to quite make $4 million, are we?

Mr. MCBROOM. No, sir; it comes to $3.8 million.

Mr. CHENOWETH. We are not going to do quite as well as the Norman project, then?

Mr. McBroom. No, sir. As I have explained, these benefits, and to some extent the allocations, are based on what the project itself will provide and produces in the way of increased fish and wildlife.

Mr. Chenoweth. The Pueblo Reservoir will have a capacity of something like 400,000 acre-feet. Wouldn't that qualify pretty well on the same basis as Norman, Mid-State, and the others we have discussed recently?

Mr. McBroom. I should say, offhand, it should be a good reservoir from a fisherman use standpoint.

Mr. Chenoweth. But you are not giving us any appreciable benefits, and I cannot understand your method of figuring benefits.

Mr. McBroom. Might I say about our east slope studies, they are now progressing. They haven't been able to progress in recent years because we depended on a system for our funds of transfer from the Bureau of Reclamation. The Bureau was unable or unwilling to transfer to us funds for the Fryingpan-Arkansas project because its planning work on it was done. Beginning with the current fiscal year, the Congress appropriates funds for this work in the Public Works Appropriation bill, but earmarked for us. One of the first things we did, Mr. Chenoweth, as soon as we got those funds available, was to plunge in on this work on Fryingpan-Arkansas, on the east slope, particularly, that we knew we had to do. I am sure when this project comes before this committee in the next session we can answer that question on Pueblo. I believe it will be one that will please you.

Mr. Chenoweth. The statement was made that there are no benefits to fish and wildlife on any of these facilities except the Ruedi Reservoir.

Mr. McBroom. That is right. I made that statement.

Mr. Chenoweth. Do you mean there would be no fish and wildlife benefits except at Ruedi?

Mr. McBroom. There will be a fish and wildlife allocation of $2,081,000, but that will not be based on any fish and wildlife benefits. That is simply the cost estimated by Reclamation of providing these minimum flows in Fryingpan and Roaring Fork Rivers.

Mr. Chenoweth. As I get the impression from what you say now that you have not completed your studies on the Fryingpan, and that you are still figuring the benefits for wildlife and fish on the Pueblo Reservoir?

Mr. McBroom. Our studies on the east slope are not complete; yes, sir.

Mr. Chenoweth. Do you have reason to believe that perhaps the final figure might run much larger than what you have indicated?

Mr. McBroom. We would have no control over the figure. That would be entirely within the province of Reclamation. It seems logical that there would be additional benefits from the reservoir near Pueblo after that study is completed.

Mr. Chenoweth. I think we should have the same consideration given the Wichita project. This is a much larger reservoir than the Cheney project. You are giving them over $4 million, just for one reservoir. We have one four times as large and you give us hardly anything. Would you explain that?

Mr. McBroom. Yes, sir. The Wichita people lacked the very fine fishing opportunities of the Rocky Mountains with which you are

blessed in the State of Colorado, and they are more likely to flock to a reservoir built by the Bureau of Reclamation or the corps in that Great Plains area than they are to a reservoir in Colorado where so many attractive alternative fishing opportunities exist.

Nevertheless, it seems that a reservoir as close to Pueblo as this one might reasonably be expected to have benefits.

Mr. CHENOWETH. You would recognize, surely, that the Pueblo Reservoir will be a very popular place, and many fishermen will be coming there.

Mr. MCBROOM. There are a lot of fishermen in Colorado, I am told, who prefer stream fishing.

Mr. CHENOWETH. What are the people going to do in Wichita?

Mr. MCBROOM. They have no choice. If they want to fish, they have to fish in the reservoir.

Mr. CHENOWETH. I must confess that I am in about the same situation as the gentleman from Texas, Mr. McBroom, so far as your procedure is concerned. I can't quite understand it. It looks to me like you are pulling these figures out of thin air.

Mr. MCBROOM. I do not think we are reaching up in the air and bringing them down any more than those who bring to this committee estimates of hydroelectric benefits, irrigation benefits, and what have you. It is all a matter of judgment. We claim to exercise sound judgment. We claim to be the experts in this field, the same as people who bring in irrigation benefits, hydroelectric power benefits and so on, claim to be the experts in those fields.

Mr. CHENOWETH. I am going to suggest that next year when you come in with your allocation for fish and wildlife, you will have something more substantial than you have presented today. I am sure with your great capacity in this field, you will be able to give us an allocation which will be more accurate and commensurate with the size of this project. I am expecting something better next year. Thank you.

Mr. ASPINALL. The gentleman from Nebraska.

Mr. MCGINLEY. I want to congratulate you for your persistence in trying to get this explained to the committee. I can tell you that from the general statements you have presented today, I think I have a little more of a glimmer of understanding about this matter. I do not want to resolve all of my quandary at this time, because I think we still have an appointment with each other to go into this thing. But I am confused when you say there has been allocated $2,081,000 to fish and wildlife exclusive of the Ruedi Reservoir area, but that does not occur because of any benefits resulting, but only because of the separable costs remaining benefits. To hold that for a moment, we go on to Ruedi and show that there are benefits and you have allocated a certain sum there. Exclusive of the Ruedi area, does this project show an overall decrease in what are now existing fish and wildlife facilities in the area compared with the project otherwise?

Mr. MCBROOM. No, sir. I don't believe we can say that. We believe it will break even with the measures put into the operating principles.

Mr. MCGINLEY. You think then it will break even?

Mr. MCBROOM. Yes, sir.

Mr. McGINLEY. So in effect it falls in the category where there are no major improvements here which add to the existing facilities?

Mr. McBROOM. That is exactly right.

Mr. McGINLEY. Is that the same category as the one that you mentioned where the existing fish and wildlife facilities are in competition with the natural facilities already existing? You had one category there.

Mr. McBROOM. Yes. A project—well, let's take the Ruedi Reservoir itself. It is in competition with fishing opportunities in that part of the State of Colorado, and no doubt the benefits to it would be greater if it were out by itself as the only fishing water anywhere within 200 miles. But since there are a great many other fishing opportunities within close distance of Ruedi, the evaluation would be lower. The number of man-days of fishermen use would be lower.

Mr. McGINLEY. I think in your statement you said that in the Ruedi Reservoir area there will be some destruction of natural facilities.

Mr. McBROOM. The stream fishery which is there at the present time will, of course, not be there when the reservoir is built, and we deducted from our total benefit estimate an amount to recognize that destruction.

Mr. McGINLEY. But you make up for that by a reservoir which will stand in lieu of the natural facilities.

Mr. McBROOM. Yes, sir. That is a net figure, the benefit that we have computed for the Ruedi Reservoir.

Mr. McGINLEY. Thank you very much.

Mr. ASPINALL. Are there any further questions?

This concludes the hearings for this year on this bill.

The committee stands adjourned.

(Whereupon, at 4:30 p.m., the committee was recessed subject to call.)

APPENDIX

REEVALUATION STATEMENT, FRYINGPAN-ARKANSAS PROJECT, COLORADO, JANUARY 1960

U.S. Department of the Interior, Bureau of Reclamation, Region 7, Denver, Colo.

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PURPOSE

This statement comprises a reevaluation of the economic justification and feasibility of the Fryingpan-Arkansas project. It incorporates significant modifications of the plan since the publication of House Document No. 187, 83d Congress, 1st session—the original feasibility report on the project. A number of minor modifications in plan were reported and explained during the course of hearings to authorize the project before Irrigation and Reclamation Subcommittees of the Senate and House Interior and Insular Affairs Committees in the 83d, 84th, and 85th Congresses.

This statement includes results from extension of hydrologic studies to more recent years, introduces revised acreage data occasioned by the formal organization of the Southeastern Colorado Water Conservancy District, reflects adjusted cost estimates indexed to October 1958 prices, and applies current procedures with respect to power marketing and benefit evaluation. Analyses contained in the statement also are consistent with findings and data included in the Report on Ruedi Dam and Reservoir, Colo., which supplements House Document No. 187.

REVIEW OF PROJECT PLAN

MODIFICATIONS

The only major modification in the plan of development for the Fryingpan-Arkansas project is the substitution of Ruedi Dam and Reservoir for Aspen

Dam and Reservoir. This substitution necessitated revision of the operating principles for the project. Those revised principles and full analysis and evaluation of Ruedi Dam and Reservoir and its effects on the Fryingpan-Arkansas project are contained in the report on that feature.

Other less significant modifications involved the following: Replanning municipal water delivery facilities to meet increased requirements of Colorado Springs; the addition of check structures with heating elements and increased forebay and afterbay facilities in the power canals to permit more flexible year around operations and maximum production of firm energy; addition of siphons and culverts to handle cross drainage along power canals; substitution of some tunnels for open canals in the western slope collection system; deletion of the Pueblo water treatment plant and the Colorado Springs substation from the original plan as similar features have already been constructed by those communities; and upward revision of the installed capacity of the powerplants from 104,800 to 123,900 kilowatts. This change was in nameplate rating only and does not result in increased generating capacity or production of more kilowatt-hours of energy.

DESCRIPTION OF PLAN

With the exception of the substitution of Ruedi for Aspen Dam and Reservoir, the basic plan for the Fryingpan-Arkansas project is the same as that contained in House Document No. 187. The project is located entirely within the State of Colorado. It is planned as a multi-purpose development which will serve the functions of irrigation, municipal and industrial water supply, power, flood control, fish and wildlife, recreation, and sediment control.

As the project involves transmountain diversion of water, features are required on both the east and west slopes of the Continental Divide. Surplus water from the Colorado River Basin will be diverted for beneficial and consumptive uses in the Arkansas River Basin in Colorado. The imported water together with regulation of native Arkansas River water will provide supplemental irrigation supplies, municipal and industrial water, and enable power generation. Flood control will be provided by the terminal eastern slope reservoir above Pueblo, Colo.

Ruedi Dam and Reservoir on the Fryingpan River, with a storage capacity of about 100,000 acre-feet, will provide replacement water on the western slope. In previous plans the replacement water was provided in Aspen Reservoir with 28,000 acre-feet of capacity. The additional capacity at Ruedi will serve other beneficial uses on the western slopes in Colorado.

The potential Fryingpan-Arkansas project includes the following principal features:

(*a*) A system of about 70 miles of canals and tunnels on the western slope for collecting and transporting water from Hunter Creek and tributaries of the Fryingpan River.

(*b*) Ruedi Dam and Reservoir with a capacity of about 100,000 acre-feet, on the Fryingpan River 14 miles above Basalt, to provide replacement water and water for other beneficial western slope uses.

(*c*) The 5.3-mile Fryingpan-Arkansas transmountain diversion tunnel.

(*d*) Enlargement of the existing Sugar Loaf and Twin Lakes Reservoirs and the construction of Pueblo Reservoir for a total eastern slope storage capacity of 777,000 acre-feet.

(*e*) Facilities for diverting Arkansas River flows into the enlarged Twin Lakes Reservoir.

(*f*) A power system consisting of about 52 miles of canals, 7 powerplants having a total installed capacity of 123,900 kilowatts, 7 switchyards, 7 substations including the existing Gunnison substation, and a primary transmission network to assure distribution of power to load centers.

(*g*) Municipal water delivery facilities for furnishing additional water to Colorado Springs, Manzanola, Rocky Ford, La Junta, Las Animas, Lamar, Crowley, Wiley, and Eads.

Construction of the municipal water delivery facilities would be undertaken by the United States only after proof was offered by the communities involved that construction by them would be infeasible, and then only after adequate repayment provisions had been completed.

COSTS AND CONSTRUCTION

The estimated total construction cost of the Fryingpan-Arkansas project, based on prices as of October 1958, is $169,905,000. This sum includes past and

FISCAL YEARS						BALANCE TO COMPLETE	ESTIMATED COMPLETION DATE	LINE NO.
1961	1962	1963	1964	1965	1966			
J A S O N D J F M A M J	J A S O N D J F M A M J	J A S O N D J F M A M J	J A S O N D J F M A M J	J A S O N D J F M A M J	J A S O N D J F M A M J			
8	9	10	11	12	13	14	15	
						280,600		1
						123,900		2
						20,500		3
								4
				Initial Storage→				5
2,062	500,000	3,350,000	3,686,000	3,000,000	2,040,000	188,560	1967	6
1,480	200,000	1,750,000	2,500,000	2,000,000	1,000,000	1,715,304 Diversion	1968	7
975	100,000	500,000	700,000	1,000,000	1,500,000	2,231,584	1968	8
1,335	100,000	1,000,000	1,150,000	1,800,000	2,500,000	1,717,969	1968	9
6,068	100,000	600,000	4,000,000	5,000,000	6,000,000	21,862,464	1973	10
197						1,218,663	1972	11
1,557	75,000	200,000	800,000	1,500,000	1,500,000	5,553,839	1972	12
109						668,480	1974	13
2,616	25,000	50,000	100,000	1,700,000	1,480,000	12,842,696	1974	14
167			30,000	300,000	500,000	194,632	1968	15
1,049			42,000	300,000	2,000,000	4,152,208	1968	16
2,078			50,000	500,000	2,500,000	9,809,032	1968	17
3,318			50,000	50,000	100,000	20,339,080	1972	18
1,917				150,000	1,229,000	10,493,225	1974	19
2,212					50,000	13,639,720	1970	20
169	25,000	50,000	78,000	100,000	200,000	587,344	1974	21
27,309	1,125,000	7,500,000	13,186,000	17,400,000	22,599,000	107,215,000		22
-27,309	-50,000	-250,000	-200,000	-200,000	-150,000	-1,650,000 2/		23
-0-	1,075,000	7,250,000	12,986,000	17,200,000	22,449,000	105,565,000		24
	175,000	350,000	614,000	800,000	251,000	-2,190,000		25
-0-	1,250,000	7,600,000	13,600,000	18,000,000	22,700,000	103,375,000		26
								27
-0-	1,250,000	7,600,000	13,600,000	18,000,000	22,700,000	103,375,000		28
								29
								30
	1,250,000	7,600,000	13,600,000	18,000,000	22,700,000	103,375,000		31
								32
								33

commended: [signature] (Operating Office Head) 10/23/59 (Date)

commended: [signature] (Regional Director) 10/23/59 (Date)

commended: _____ (Chief, Div. of PC & F) _____ (Date)

proved: _____ (Commissioner) _____ (Date)

ised: _____ (Date)

SHEET 1 OF 1 SHEETS

Form PF-2 UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION MAR. 1957

CONTROL SCHEDULE
FRYINGPAN - ARKANSAS PROJECT
COLORADO

Denver, Colorado (OFFICE) October 15, 1959 (DATE) 7 (REGION)

☐ GENERAL INVESTIGATIONS ■ CONSTRUCTION ☐ OPERATION & MAINTENANCE ☐ OTHER

GPO 855574

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scheduled investigations costs of $880,000. Investigations costs of $203,985 financed from Colorado River development funds (nonreimbursable) and $100,000 contributed by the State of Colorado for recent and current work by the Bureau of Reclamation of the Fryingpan-Arkansas project and for preparation of the report on the Ruedi Dam and Reservoir are not included in this sum of $880,000. The total of $169,905,000 also includes the full estimated cost of Ruedi Dam and Reservoir ($12,831,000), of which $7,600,000 is assignable to the Fryingpan-Arkansas project.

Construction of the project is scheduled over a 13-year period, 1962 to 1974, as shown on the accompanying control schedule. In formulating this schedule, numerous interrelated factors were considered, including: a systematic sequence of work, legal and fund requirements, and capability of the project to provide revenues from water and power deliveries at the earliest practicable time during the construction period.

COMPARISON OF CHANGES

A succeeding tabulation shows the significant changes in plan and cost estimates for the Fryingpan-Arkansas project. It lists principal project features; reports cost estimates contained in House Document No. 187, congressional testimony in 1957, and this statement; and cites pertinent reasons for changes in estimates from 1957 to date. The tabulation, therefore, provides a convenient documentation of the historical changes in plans and costs.

Comparison of changes in plan and cost estimates

[Thousands of dollars]

Features	H. Doc. 187 (1953)	S. 60 and H.R. 594 (1957)	Current plan (1959)	Principal reason for change between 1957 and 1959
Price index date	January 1953	October 1956	October 1958	
Total project cost	172,898	159,287	169,905	
Basic project features	151,398	145,996	156,144	
Ruedi Dam and Reservoir			12,831	Feature added.
Aspen Dam and Reservoir	8,102	7,235		Feature deleted.
Sugar Loaf Dam and Reservoir	7,248	6,615	6,063	Price decline.
Twin Lakes Dam and Reservoir	10,222	9,004	8,311	Do.
Salida forebay	(1)	(1)	517	Change in design for power.
Salida afterbay	310	362	708	Do.
Pueblo Dam and Reservoir	43,453	36,926	34,603	Price decline.
Diversion works	748	1,143	1,051	Do.
Hunter Creek—Aspen Canal	240	250		Deletion—Ruedi substitution.
South side collection system	9,058	10,070	10,142	Price increase.
North side collection system	21,551	15,956	15,977	Do.
Fryingpan-Arkansas divide tunnel	10,095	9,107	9,213	Do.
Snowden Canal	587	483	806	Do.
Power canals	12,639	12,848	17,619	Change in design for power.
Powerplants	14,917	23,813	25,323	Price increase.
Switchyards	3,885	4,150	4,384	Do.
Substations	2,091	1,509	1,523	Do.
Transmission lines	5,079	5,511	6,027	Do.
General property	1,173	1,014	1,046	Do.
Municipal water delivery system	21,500	13,291	13,761	
Arkansas Valley system	20,984	7,863	8,276	Do.
Colorado Springs system	516	5,428	5,485	Do.

[1] Forebay not specifically identified but cost included in the power canal.

FORMATION OF CONSERVANCY DISTRICT

House Document 187 reported the project service area to be 322,000 acres of irrigated land located entirely in the Arkansas River Valley between Leadville and the Colorado-Kansas State line. That acreage was determined by a semi-detailed land classification made in 1939–40 for the area below Pueblo and by a

LEGEND: Types of Activity

Preconstruction — Construction

LINE NO.	CLASS AND ACCOUNT	PROGRAM ITEM	QUANTITY	UNIT	ESTIMATED TOTAL
	1	2	3	4	5
1		Irrigation Service - Supplemental	280,600	Ac	
2		Power Development	123,900	KW	
3		Municipal & Industrial Water Development	20,500	A.F.	
4					
5		CONSTRUCTION PROGRAM			
6		Ruedi Dam and Reservoir	100,000	A.F.	12,831,000
7		Fryingpan-Arkansas Divide Tunnel	5.3	Mi.	9,213,000
8		Sugar Loaf Dam & Reservoir Enlargement	117,000	A.F.	6,063,000
9		Twin Lakes Dam and Reservoir Enlargement	260,000	A.F.	8,311,000
10		Pueblo Dam, Reservoir and Powerplant	400,000 12,000	A.F. KW	37,758,000
11		Salida - Forebay and Afterbay	300 ea	A.F.	1,225,000
12		South Side Collection System	19.6	Mi.	9,679,000
13		Hunter Creek Ext. Canal and Diversion Dam	7.1	Mi.	672,000
14		North Side Collection System	43.8	Mi.	16,282,000
15		Snowden Diversion Dam and Canal	10.0	Mi.	1,030,000
16		Elbert Canal and Powerplant	10,600	KW	6,528,000
17		Twin Lakes-Otero-Wapaco Canals Otero and Wapaco Powerplants	12.9 40,400	Mi. KW	12,926,000
18		Princeton-Pancho-Salida Canals Princeton-Pancho-Salida Powerplants	29.5 60,900	Mi. KW	20,646,000
19		Trans. Lines, Substations and Switchyards	411.0	Mi.	11,934,000
20		Municipal Water Systems	159.0	Mi.	13,761,000
21		(Exclusive of Municipal General Property (Water System)			1,046,000
22		TOTAL PROJECT COST			169,905,000
23		Adjustments			-3,380,000
24		TOTAL COST TO APPROPRIATION			166,525,000
25		Other Expenditures and Credits			-0-
26		TOTAL EXPENDITURES			166,525,000
27		Undelivered Orders			
28		TOTAL OBLIGATIONS			166,525,000
29					
30		Funds Available			
31		Funds Required			
32					
33					

Notes:

1/ Excludes $203,985 non-reimbursable funds from Colorado River Development Fund
$100,000 non-reimbursable funds from the State of Colorado.

2/ Provides for transfer of Salida-Gunnison Transmission Line and Salida and Gun
Substations from Colorado-Big Thompson Project ($1,355,000).

UNIT	ESTIMATED TOTAL	TOTAL TO JUNE 30, '59	FISCAL YEARS 1960	1961	1962	1963	1964	
4	5	6	7	8	9	10	11	
Ac								
KW								
A.F.								
A.F.	12,831,000	63,722	656	2,062	500,000	3,350,000	3,686,000	3
Mi.	9,213,000	45,745	471	1,480	200,000	1,750,000	2,500,000	2
A.F.	6,063,000	30,131	310	975	100,000	500,000	700,000	1
A.F.	8,311,000	41,271	425	1,335	100,000	1,000,000	1,150,000	1
A.F. KW	37,758,000	187,536	1,932	6,068	100,000	600,000	4,000,000	5
A.F.	1,225,000	6,077	63	197				
Mi.	9,679,000	48,108	496	1,557	75,000	200,000	800,000	1
Mi.	672,000	3,376	35	109				
Mi.	16,282,000	80,855	833	2,616	25,000	50,000	100,000	1
Mi.	1,030,000	5,148	53	167			30,000	
KW	6,528,000	32,409	334	1,049			42,000	
Mi. KW	12,926,000	64,228	662	2,078			50,000	
Mi. KW	20,646,000	102,545	1,057	3,318			50,000	
Mi.	11,934,000	59,248	610	1,917				
Mi.	13,761,000	68,364	704	2,212				
	1,046,000	5,233	54	169	25,000	50,000	78,000	
	169,905,000	843,996	8,695	27,309	1,125,000	7,500,000	13,186,000	17
	-3,380,000	-843,996	-8,695	-27,309	-50,000	-250,000	-200,000	
	166,525,000	-0-	-0-	-0-	1,075,000	7,250,000	12,986,000	17
	-0-				175,000	350,000	614,000	
	166,525,000	-0-	-0-	-0-	1,250,000	7,600,000	13,600,000	18
	166,525,000	-0-	-0-	-0-	1,250,000	7,600,000	13,600,000	18
					1,250,000	7,600,000	13,600,000	18

r Development Fund and
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,355,000).

Recommended: [signature] (Operating Office Head) 10/23/59 (Date)

Recommended: [signature] (Regional Director) 10/23/59 (Date)

Recommended: _____ (Chief, Div. of PC & F) _____ (Date)

Approved: _____ (Commissioner) _____ (Date)

Revised: _____ (Date)

SHEET 1 OF 1 SHEETS

Form

reconnaissance survey during 1941–42 of the lands above Pueblo. These land classification surveys were reviewed in 1954–55. The review included section-by-section checks of the original field sheets and corrections of deficiencies in the data pertaining to soils, drainage, and topographic conditions.

In 1957 the potential project water users, with leadership by the Water Development Association of Southeastern Colorado, established tentative boundaries for a conservancy district and began circulation of petitions for its creation. The boundaries delineated by the petitions excluded lands in the Arkansas Valley that obtain irrigation service by diversions from the river below John Martin Reservoir and lands served by the Las Animas Town canal in Bent County and by the Booth Orchard ditch in Pueblo County. The latter two ditches requested exclusion from the conservancy district. The district boundaries also include irrigated lands in the Fountain River Valley in El Paso and Pueblo Counties which will benefit by return flows from municipal water used in Colorado Springs.

In February 1958 the district court in Pueblo received the petitions for creation of the conservancy district. Shortly thereafter the court held hearings on this matter. On April 30, 1958, the judge of the court approved the formation of the Southeastern Colorado Water Conservancy District. Subsequently, a board of directors for the district was appointed by the court.

With the creation of the conservancy district a revised tabulation was made of the irrigable lands that might be served by the Fryingpan-Arkansas project. The results of the land classification of 1954–1955 were imposed upon the district area. As the classification had been confined to the Arkansas River Valley it was necessary to use State reports on the irrigated acreage in the Fountain River Valley. A summary of the irrigable (project) lands in the district follows:

Area	Irrigable lands being irrigated or under canals with water rights		
	Total	Class 1	Class 2
Arkansas River Valley:			
Above Pueblo Reservoir	12,538	1,662	10,876
Pueblo Reservoir to John Martin Reservoir	255,254	120,016	135,238
Subtotal, lands to receive direct service	267,792	121,678	146,114
Fountain River Valley, lands to receive indirect service	[1] 12,815	----------	----------
Total district service area	280,607	----------	----------
Rounded total	280,600	----------	----------

[1] Figure from Colorado irrigation division engineer. Lands have not been classified.

Hydrology and Operations

IMPORTATIONS

Since the testimony of 1957 before the House Irrigation and Reclamation Subcommittee, hydrologic studies have been extended to cover the period 1911–57. The original period of study was 1911–44. Studies of water available for importation by the Fryingpan-Arkansas project for the extended period are included in the report on Ruedi Dam and Reservoir. Average annual project imports of water for the 1911–57 period amount to 69,100 acre-feet compared with 69,200 acre-feet for 1911–44.

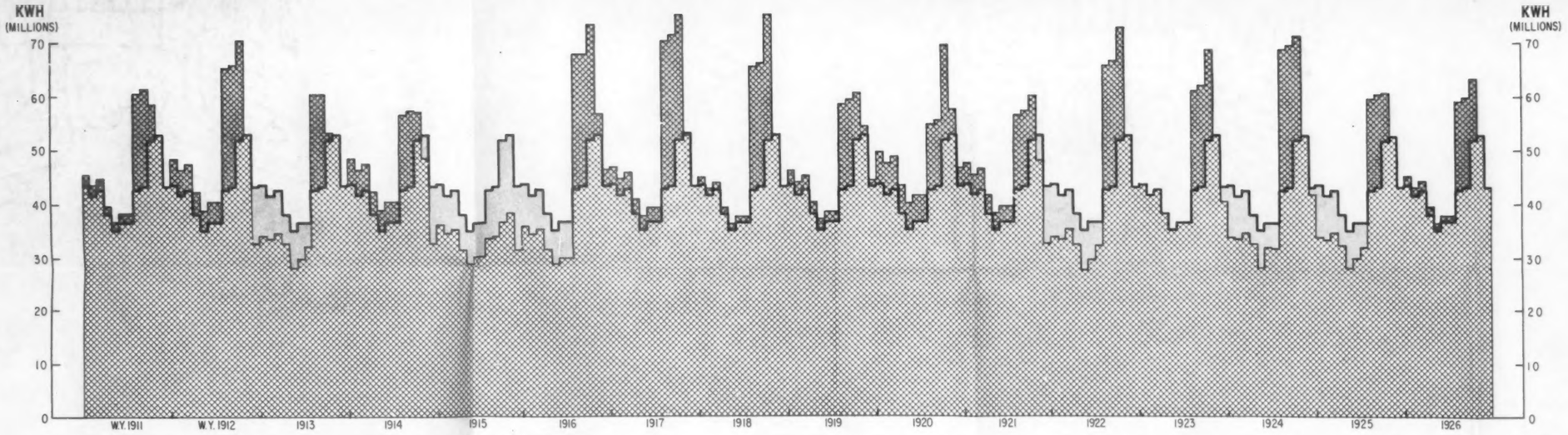
The western slope collection system for the project remains the same as that contained in House Document 187, except that some tunnels have been substituted for open canals. Requirements for bypass of water for fishery, specified in the revised operating principles for the project, are the same as originally contemplated.

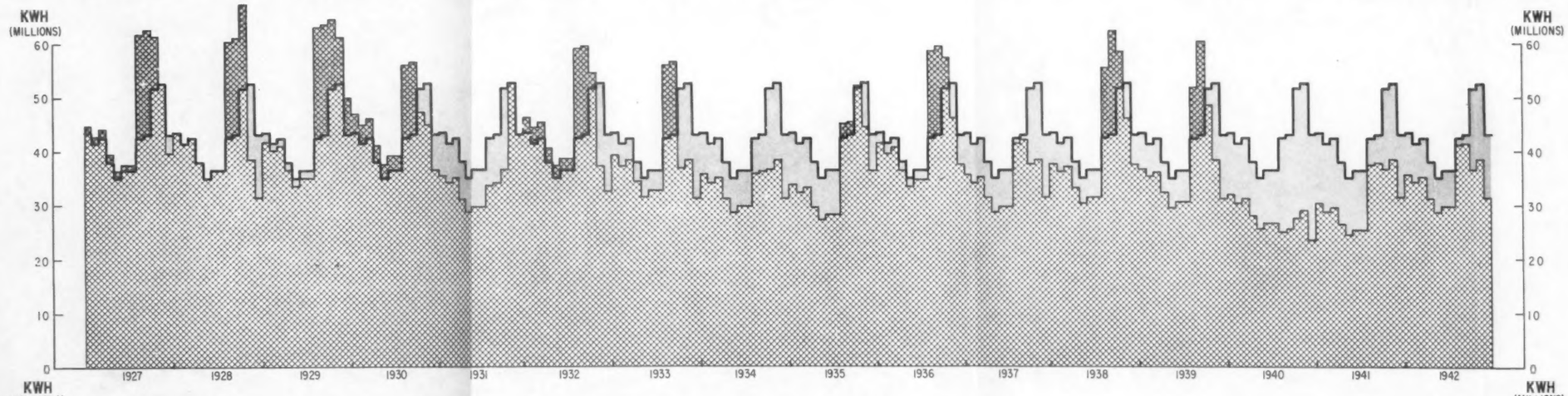
On April 24, 1959, a stipulation was signed by representatives of the Southeastern Colorado Water Conservancy District and the Colorado River Water Conservation District, a western slope entity. The stipulation provided that any decree which might be entered by the court awarding a priority of right to use of the Fryingpan and Roaring Fork River water by the Fryingpan-Arkansas project should be of the same date and priority number as previously awarded by the court to the potential Basalt project.

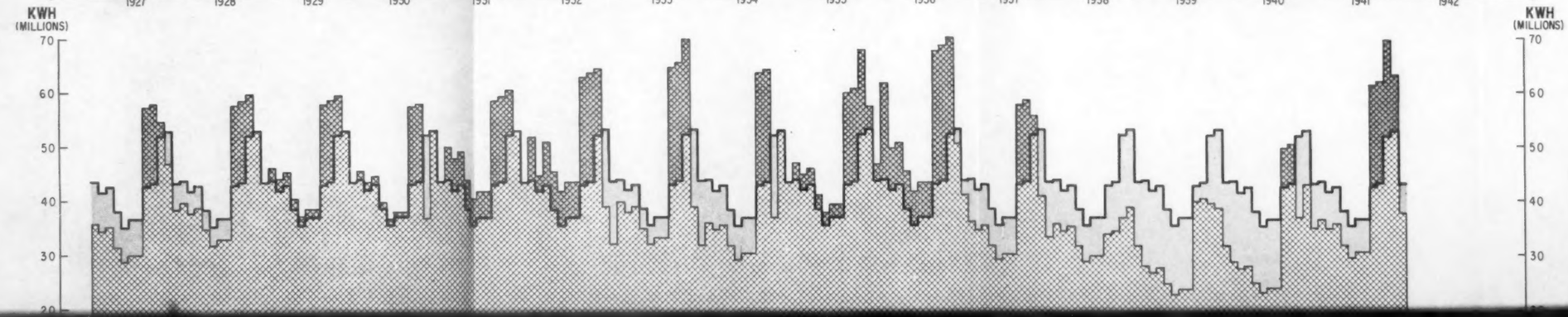
POWER SUPPLY

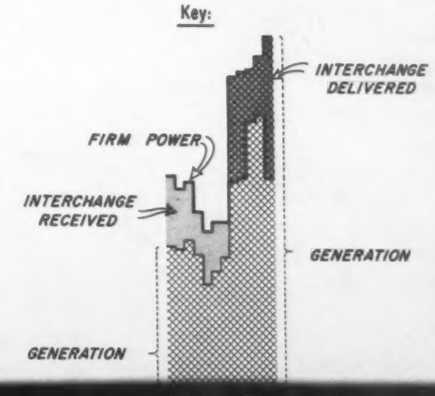
FRYINGPAN-ARKANSAS PROJECT

BASED ON HYDROLOGIC STUDIES, 1911-1957





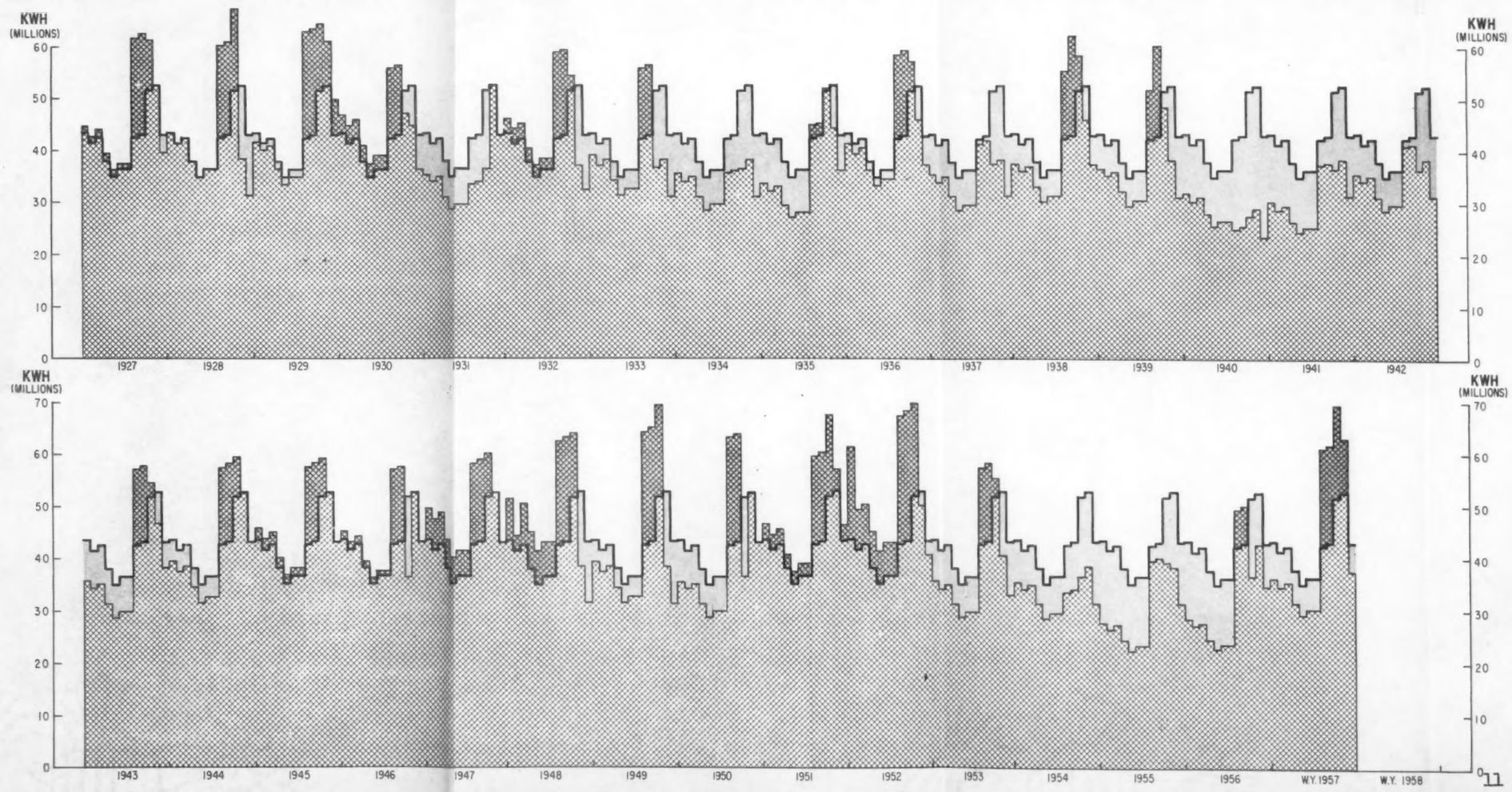


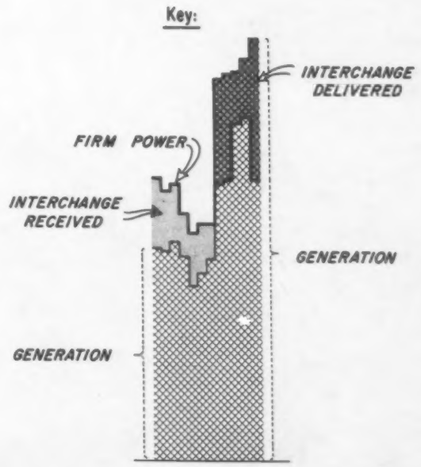


POWER SUPPLY

FRYINGPAN-ARKANSAS PROJECT

BASED ON HYDROLOGIC STUDIES, 1911-1957





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On August 3, 1959, the district court in Glenwood Springs delivered decree No. 718 with the priority date July 29, 1957, for the Fryingpan-Arkansas project. This is the same priority number and date previously granted the Basalt project. The decree and stipulation limit Fryingpan-Arkansas project diversions to 120,000 acre-feet of water in any one year and to an aggregate of 2,352,800 acre-feet in any period of 34 consecutive years. Based on water supply studies for the 1911–57 period, these limitations would not be restrictive or result in impairment of the project operations or feasibility.

POWER PRODUCTION

Extension of the operation studies through 1957 results in a small change in average annual power production by the Fryingpan-Arkansas project. Annual generation amounts to 507.2 million kilowatt-hours for the 1911–57 period compared with 505 million kilowatt-hours for the 1911–44 period.

The earlier power studies indicated that of the 505 million kilowat-hours generated annually, 400 million would be firm energy and 105 million would be nongrm. However, these evaluations did not include advantages available through integration with adjacent power systems.

Project power facilities will be interconnected with the western division, Missouri River Basin, and other adjacent utility systems, thereby providing for energy interchange. Combining advantages gained by system interconnection with the other modifications of the plan permits more flexible year around operations, resulting in increased production of firm energy.

An analysis by months for the 47-year period, 1911–57, shows that project storage is adequate to permit power releases as required by load characteristics. Sufficient plant capacity and forebay and afterbay storage are planned to provide a high degree of flexibility and a dependable capacity of 100,200 kilowatts over the entire period of study. With this operating flexibility, available capacity and interconnection with other systems, excess energy available during periods of above average water supply can be exchanged for equal but relatively small amounts of energy required in periods of below average water supply so as to maintain firm energy at 507.2 million kilowatt-hours each year. The exhibit on the next page graphically shows monthly generation for the 47-year period of study and the amounts of energy interchange necessary to maintain a firm annual power supply of 507.2 million kilowatt-hours.

To further test the adequacy of plant capacity and pondage in the project facilities to meet load requirements, an hourly study was made for a typical peak week during August and a typical peak week during December. It was found that instead of operating the Elbert powerplant only in the winter months as previously planned it would be necessary to operate throughout the year to meet the required peaks. Sugar Loaf and Twin Lakes Reservoirs have sufficient capacity and flexibility to do this. The hourly studies also reveal that increased pondage capacity in the power canal system would be required to provide sufficient flexibility for weekly and daily operation. The increased capacities have been incorporated in the project facilities with corresponding increases in the cost estimates. The previous and present pondage capacities are as follows:

	Previous (acre-feet)	Present (acre-feet)
Forebay capacity, Princeton powerplant	500	500
Forebay capacity, Pancho powerplant	200	250
Salida forebay	250	300
Salida afterbay	200	300

The hourly operation studies took advantage of the additional check structures now provided in the power canals which will permit change in power releases as may be necessary to meet load requirements. Power releases from Salida Afterbay were held to plus or minus 25 percent of average releases to avoid a wide fluctuation of riverflow below Salida.

IRRIGATION AND MUNICIPAL WATER SUPPLIES

Previous water supply studies for irrigation were based on a service area figure of 322,000 acres and the 1911–44 period. With the organiaztion of the conservancy district, the total irrigation service area was reduced to 280,600 acres. About 267,800 acres are situated in the Arkansas River Valley and will receive direct service by the project. The Fountain River Valley lands of about 12,800 acres can be served only by return flows from municipal water used by Colorado Springs.

Reduction of the project acreage and extension of the water supply data necessitated revision of the original reservoir operation study. Because revised transmountain importations varied only slightly from the original estimates, it was considered necessary to revise only the operation of the terminal Pueblo Reservoir. Thus imported water, plus storable Arkansas River flood flows, plus past winter diversions, was regulated in the Pueblo Reservoir so that irrigation supplies and benefits under the revised acreage could be determined. With respect to irrigation, this operation study gives the same results as would a combined power and irrigation operation except for the effect of evaporation from upstream reservoirs. Such evaporation would reduce the project yield and introduce minor errors in the spills. These factors, however, were accounted for by analysis and their effects are reflected in the irrigation benefits. The Pueblo Reservoir study was made for the period 1911–57.

The preproject headgate shortage for the 267,800 acres of Arkansas Valley lands in the service area is 317,200 acre-feet annually for the 47 years of study. The post-project headgate shortage for these lands for the same period would be 154,100 acre-feet annually. Thus, the project would alleviate 163,100 acre-feet of headgate shortage annually by sale of imported water and regulated flood flows, by better regulation of flows now diverted in the winter months, and by reuse of return flows. Return flows would provide an additional average annual 29,500 acre-feet of water available at headgates below the project. The studies show that without the project the Arkansas Valley project lands were short of water in 46 of the 47 years studied. The project would eliminate these shortages in 20 out of the 46 years and greatly reduce the shortages in other years.

The project would also furnish 20,500 acre-feet of water annually to municipalities as follows: 10,000 acre-feet to Colorado Springs, 3,000 acre-feet to Pueblo, and 7,500 acre-feet to other Arkansas Valley towns. Usable return flow from project municipal water is reflected in the analysis of irrigation supplies.

The next statistical table presents a summary of the water available for irrigation in the Arkansas Valley as a result of the project. The original summary of water available for irrigation contained in House Document No. 187 shows a total headgate supply for project lands to be served in the Arkansas Valley of 189,800 acre-feet in contrast with the 163,100 acre-feet shown in the following table. The difference arises principally from the following factors: Water for municipal use was increased from 17,000 to 20,500 acre-feet annually; 2,000 acre-feet of additional yield annually from the city of Pueblo's Wertz Ditch is omitted in the present summary as Pueblo has improved its system so that credit for this item is no longer attributable to the project: as compared with the original hydrologic studies for 1911–44, the extended 1911–57 period of study shows that 4,300 acre-feet less of storable Arkansas River flood flows were regulated by Pueblo Reservoir; and finally, but of foremost importance, the conservancy district as now established covers a service area of 280,600 acres of which 268,000 acres are in the Arkansas River Valley as contrasted with the potential area of 322,000 acres contemplated in the original studies. This results in less reuse of return flows within the service area.

With respect to the entire Arkansas River Valley in Colorado, however, the overall effects of the project on water supply for irrigation has changed very little. The figure in the original summary in House Document No. 187 of 189,800 acre-feet is comparable with 192,600 acre-feet shown in the following table. The latter figure includes 29,500 acre-feet of water available for use in the Arkansas Valley below the project lands.

Water available for irrigation use in Arkansas Valley as a result of Fryingpan-Arkansas project—Annual averages for years 1911–57

[In thousands of acre-feet]

Item	Gross water	Spills [1]	Losses		Net new water at Pueblo Reservoir	New headgate supply for project lands [2]	Additional new headgate supply for lands below project area [3]	Total new headgate supply
			Transportation	Reservoir evaporation [1]				
Project imports [4]	69.1		7.5	5.3	56.3			
Storable Arkansas River floods [5]	19.1	4.1		1.3	13.7			
C.F. & I. industrial water [6]								
Municipal water [7]	−20.5				−20.5			
Subtotal	67.7	4.1	7.5	6.6	49.5	69.3	5.0	74.3
Municipal water return flows, Arkansas River [8]	7.3	3.1			4.2	5.8	.4	6.2
Additional Twin Lakes diversions [9]	14.2		1.3	1.1	11.8	16.5	1.2	17.7
Winter flows, Arkansas River [10]	88.6	16.4		6.3	65.9	65.9		65.9
Subtotal, Arkansas Valley	177.8	23.6	8.8	14.0	131.4	157.5	6.6	164.1
Municipal water return flows, Fountain River [8]	7.0	3.0			4.0	5.6	.4	6.0
Total water supply in project area	184.8	26.6	8.8	14.0	135.4	163.1	7.0	170.1
Usable spills							22.5	22.5
Grand total	184.8	26.6	8.8	14.0	135.4	163.1	29.5	192.6

[1] Determined from reservoir operation study.
[2] New supply plus reuse of return flows. Except for reregulated Arkansas River winter flows, the headgate supply is 1.4 times the net new supply.
[3] Additional new headgate supply including reuse of winter return flows and use of spills on lands below boundaries of conservancy district in Colorado.
[4] Divertible project supply from Fryingpan River and Hunter Creek, exclusive of Busk-Ivanhoe diversions and fish exchange water.
[5] Water at Pueblo damsite which would spill from John Martin Reservoir in years of high runoff.
[6] 4,000 acre-feet of present C.F. & I. water will be regulated in project reservoirs.
[7] 20,500 acre-feet of project-municipal water (10,000 to Colorado Springs; 3,000 to Pueblo; 7,500 to valley towns).
[8] Estimated as 70 percent of project municipal water.
[9] Additional imports by Twin Lakes made possible by additional storage capacity in Twin Lakes Reservoir and by replacement capacity on the western slope.
[10] Arkansas River winter flows now being diverted for direct use would be stored in project reservoirs for summer use.

Economic Justification

BENEFITS

Irrigation

The analysis of irrigation benefits is based upon farm budget studies representing future conditions "with" and "without" the project in operation. Because of the organization of the conservancy district, definite delineation of the service area, and revision of studies of water supplies available for irrigation, it has been necessary to review and revise the earlier benefit studies.

An analysis was made of six ditches serving about 225,000 acres of irrigated lands or 80 percent of the overall project service area. Basic information on land use, crop yields, costs, and livestock enterprises used in previous budgets was applied in the revised evaluation. Corrections were made in these data to conform with agricultural price indexes of 250 for prices received and 265 for prices paid (1910–14=100). The investment for all buildings and improvements was estimated at $12,000 per farm based on available records for the area. Machinery and equipment inventories were adjusted to represent land use under the various ditches analyzed. The six ditches are the Bessemer,

Colorado, Highline, Catlin, Holbrook, and Fort Lyons—All in the Arkansas River Valley.

Expansion of the farm budget data for determination of the effects of the project was accomplished by relating studies of future conditions without the project to the effective historical water supply for lands in the direct service area in the Arkansas Valley. In contrast, the studies of conditions with the project were projected to represent a full water supply for the same area. The difference enabled computation of total benefits if the total shortage of 317,200 acre-feet of water could be eliminated. The values were then adjusted downward to reflect benefits for the 163,100 acre-feet of new headgate water supply which the Fryingpan-Arkansas project will provide. Identical benefits per acre-foot were assumed for lands in the Fountain Valley which would receive indirect service, for lands in the Arkansas Valley which would receive direct service, and for lands below John Martin Reservoir which would utilize return flow only.

Evaluated direct benefits represent net increases in farm income due to operation of the project and indirect and public benefits, secondary impacts of the project. The evaluations are segregated for two areas: first, for the project area of 280,600 acres, and second, for irrigated lands served by diversions from the Arkansas River below John Martin Reservoir which will benefit from project return flows estimated at 29,500 acre-feet of new headgate water supply. A summary of the annual irrigation benefits follows:

Item	Project service area	Lands below John Martin Reservoir	Total benefited area
Direct benefits	$2,471,100	$446,900	$2,918,000
Indirect and public benefits	1,768,550	319,850	2,088,400
Total benefits	4,239,650	766,750	5,006,400

Municipal and industrial water supply

Benefits for municipal and industrial water supply are based upon alternative single-purpose cost studies. It was estimated that in the absence of the project 20,500 acre-feet of water for municipal and industrial use could be obtained by diversion from the Fryingpan River on the western slope. Required features would be a tunnel with a capacity of 210 cubic feet per second through the Continental Divide and enlargement of Sugar Loaf Dam and Reservoir by 62,000 acre-feet of storage capacity. The estimated construction cost of these features is $11,084,000 which, with interest during construction of $517,000, would require a total investment of $11,601,000. The annual O.M. & R. costs would be $13,350. This alternative excludes costs of municipal water delivery systems for Colorado Springs and Arkansas Valley communities; hence, it represents only the basic project water supply.

To derive the full municipal water alternative, the specific costs of the project municipal water delivery system were added. These costs include $13,761,000 construction costs and $455,000 interest during construction. A summary of annual benefits for municipal and industrial water follows:

Item	*Amount*
Investment:	
Basic project supply	$11,601,000
Delivery system	14,216,000
Total	$25,817,000

	50 years	100 years
Equivalent of investment	$910,270	$704,970
Annual O.M. & R.	206,630	206,630
Total annual benefits	1,116,900	911,600

Power

Recently published studies by the Federal Power Commission on alternative costs of steampower in market areas of the upper Colorado River Storage project were used to evaluate power benefits. One of the subareas included in the Federal Power Commission's data covered southeastern Colorado which will be the principal market area for electric energy from the Fryingpan-Arkansas project.

In the absence of the project, it was assumed that the makeup of future power supplies in southeastern Colorado would consist of a combination of private, local public, and Federal developments. Colorado Springs and other municipalities in the area already have municipal power systems. There is some federally financed generating capacity in the area resulting from the REA program. Analysis of the pattern of the existing supply indicates that approximately 30 percent would be private development; 60 percent, local public; and 10 percent, Federal.

Capacity values in the alternative cost studies vary for each of the components as they reflect differences in costs of financing, taxes, and other fixed charges. The total costs per kilowatt of dependable capacity at load center for these components are approximately $33 for private steamplants, $15.50 for Federal plants, and $19 for local public plants. The weighted average cost is $22.79 per kilowatt. The incremental cost of energy generation and its transmission to load center was calculated at 2.82 mills per kilowatt-hour regardless of the type of financing.

The dependable capacity of the project hydroelectric system is estimated at 100,200 kilowatts at approximately 57 percent load factor. Allowance of 7½ percent for transmission losses on average annual generation of 507.2 million kilowatt-hours provides 469.2 million kilowatt-hours at load center. A summary of the alternative power values follows:

Item	Total	Taxes included
Composite capacity value ($22.79×100,200 kilowatts)	$2,283,400	$531,100
Energy value (2.82 mills×469,200,000 kilowatt-hours)	1,323,100	
Total annual benefits	3,606,500	531,100

Associated functions

Pueblo Reservoir includes 93,000 acre-feet of flood control storage which would significantly reduce potential flood damages along the Arkansas River between the Pueblo and John Martin Reservoirs. Historical records show that from Canon City eastward damaging floods along the Arkansas River are fairly frequent and of sizable volume and magnitude. The largest flood of record, caused by intense rains in the vicinity of Pueblo, occurred in June 1921. This flood reached a peak discharge of about 103,000 second-feet at Pueblo. Downstream tributaries contributed to the flow until the peak reached about 200,000 second-feet at La Junta.

The John Martin Reservoir provides flood protection to downstream areas. The reach of the river above that reservoir has no protective works other than the floodway channel through the city of Pueblo. The Corps of Engineers conducted the flood control studies during the original project investigations. The corps has reevaluated the flood control benefits attributable to the project at $708,000 annually.

Detailed evaluations for fish and wildlife and recreation have not been made in the eastern slope areas of the Fryingpan-Arkansas project. During the original project studies, however, the Fish and Wildlife Service and the Colorado Department of Games and Fish collaborated in studies on the western slope water collection area. They concluded that costs of the Hunter Creek extension diversion dam and canal and some incremental capacities in the south side collection system and the Fryingpan-Arkansas divide tunnel were justified for inclusion

in the plan. Those increments would prevent future fishery losses that would occur on the upper reaches of the Roaring Fork River when the Twin Lakes Reservoir & Canal Co. diverted water up to its full right. The extensions and increased capacity of these features would permit up to 3,000 acre-feet of surplus flows in May and June to be diverted via project facilities for storage in east slope reservoirs. The 3,000 acre-feet would be released to the Twin Lakes Co. in the late summer months in lieu of diversions through the Twin Lakes Tunnel, thus preserving adequate flows for fish in the Roaring Fork River.

The original evaluation of sediment control benefits of $141,000 annually from the Pueblo Reservoir has been retained for this analysis. These benefits consist of prolongation of the useful life of the John Martin Reservoir and anticipated reduction of annual operation and maintenance expenses at existing diversion works and canals between the two reservoirs.

COSTS

The estimated construction cost of the Fryingpan-Arkansas project is $169,905,000, including the full cost of Ruedi Dam and Reservoir. Interest during the 13-year construction period amounts to $5,714,600. It is computed by relating the schedule of plant-in-service to annual fund requirements and applying an interest rate of 2.5 percent on the net accumulation of construction expenditures for each year. Total annual O.M. & R. costs, including Ruedi Reservoir, amount to $1,240,000.

Since the Fryingpan-Arkansas project is obligated by the revised operating principles for only a share of the Ruedi Dam and Reservoir costs, it is necessary to deduct the costs of that feature associated with western slope uses of water as set forth in the Ruedi report. The following table shows that deduction.

Item	Total costs	Ruedi costs assigned to western slope uses	Balance of costs assigned to Fryingpan-Arkansas project
Project cost	$169,905,000	$5,231,000	$164,674,000
Interest during construction	5,714,600	265,600	5,449,000
Total investment	175,619,600	5,496,600	170,123,000
Annual O.M. & R. costs	1,240,000	14,200	1,225,800

Other costs must be considered in an economic analysis of the project. Taxes foregone in the development of Federal hydroelectric power are included as a cost item offsetting the same value included in power benefits. An economic cost of $2 per acre-foot of transmountain diversion is included for storage regulation provided by the upper Colorado River storage project. Preauthorization investigations costs are excluded from the benefit-cost analysis.

BENEFIT-COST ANALYSIS

The next statistical table comprises a summary of the benefit-cost analyses for 50- and 100-year periods. The latter period is well within the useful life of the project works. Except for Pueblo Dam and Reservoir, a minimum of sediment deposition will occur in the storage works. Ample sediment space is provided in Pueblo Reservoir for the 100-year period.

The Fryingpan-Arkansas project will be a highly productive development as indicated by the benefit-cost ratio of 1.59 for the 100-year period, considering all benefits, and the ratio of 1.08 for a 50-year period, considering direct benefits only.

Summary of benefit-cost analysis

Item		Amount
Investment:		
Net project cost [1]		$164,674,000
Interest during construction		5,449,000
Less investigations costs [1]		880,000
Net investment		169,243,000
	50 years	100 years
Annual costs:		
Equivalent of investment	$5,967,500	$4,622,000
O.M. & R. costs	1,225,800	1,225,800
Taxes foregone (power system)	531,100	531,100
Regulation by upper Colorado River storage project	138,200	138,200
Total annual costs	7,862,600	6,517,100
Annual benefits:		
Municipal water	1,116,900	911,600
Irrigation	5,006,400	5,006,400
Direct	2,918,000	2,918,000
Indirect	2,088,400	2,088,400
Power	3,606,500	3,606,500
Flood control	708,000	708,000
Sediment control	141,000	141,000
Total annual benefits	10,578,800	10,373,500
Benefit-cost ratios:		
Total benefits	1.35	1.59
Direct benefits only	1.08	1.27

[1] Excludes investigations costs of $100,000 contributed by the State of Colorado and $203,985 Colorado River development funds, both nonreimbursable.

Feasibility Analysis

cost allocation

Project costs, interest during construction, and O.M. & R. for the Fryingpan-Arkansas project have been allocated concurrently by the separable costs-remaining benefits method. The allocation to fish and wildlife is limited to separable costs of features designed to prevent future fishery losses on the western slope. Other functions to which costs are allocated include irrigation, municipal and industrial water, power, and flood control. As no project pumping is involved, the power allocation is wholly for commercial power. No costs have been allocated to recreation.

Estimated costs of single-purpose alternatives were developed for all functions except fish and wildlife. The alternatives for municipal water and power have been described previously.

The single-purpose alternative for irrigation includes a western slope replacement reservoir of 28,000 acre-foot capacity, a western slope water collection system, a transmountain diversion tunnel, the Snowden diversion works and canal, and three eastern slope reservoirs with a total storage capacity of 549,000 acre-feet. The total estimated construction cost of those features is $85,534,000. Interests during construction is computed at $3,345,000, making a total investment of $88,879,000. Annual O.M. & R. on this system is estimated at $118,850.

For flood control, estimates of a single-purpose alternative at the Pueblo site were developed. Capacity was set at 190,000 acre-feet to provide for both flood storage and sediment. The total investment amounts to $27,691,500, consisting of $26,690,500 for construction and $1,001,000 for interest during construction. O.M. & R. on this feature would be $11,020 annually. Separable costs were determined for all purposes. In the case of municipal water, those costs are limited to specific costs of the delivery systems. No increments of costs could be omitted from the basic project for this purpose without impairment of operations for the remaining functions. A tabular segregation of

separable and remaining joint costs follows, excluding the assignments of costs to western slope uses of Ruedi Dam and Reservoir:

Item	Project costs (thousands of dollars)	Annual O.M. & R. (dollars)
Basic project:		
Separable costs:		
Irrigation—Pueblo Reservoir	3,369	1,390
Power:		
Twin Lakes Reservoir	2,980	780
Pueblo Reservoir and general property	625	11,860
Specific costs	55,059	891,760
Total	58,664	904,400
Flood control—Pueblo Reservoir	4,006	
Fish and wildlife	2,081	12,690
Total separable costs	68,120	918,480
Remaining joint costs	82,793	114,040
Total basic project	150,913	1,032,520
Municipal water delivery system	13,761	193,280
Net project costs	164,674	1,225,800

Details of the cost allocation are shown on page 23. Capital and O.M. & R. costs allocated to flood control and fish and wildlife are nonreimbursable while the allocations to irrigation, municipal water, and power are repayable. Investments for the last two purposes are amortized with interest.

The reimbursable annual O.M. & R. expenses associated with these repayable capital costs are $87,420 for irrigation, $905,340 for power, and $11,620 for municipal water supply. The annual O.M. & R. costs on the municipal water delivery system amount to $193,280. A summary of the allocation of the net project cost, repayable interest during construction and reimbursable investments is shown on page 24.

Allocation of costs, Fryingpan-Arkansas project

[Dollars in thousands]

Item	Total	Municipal water	Irrigation	Power	Flood control	Fish and wildlife
Basic project:						
Benefits—Capitalized	$276,327	$11,981	$141,985	$102,282	$20,079	
Alternate costs	$234,520	$11,981	$92,253	$102,282	$28,004	
Limited benefits	$229,104	$11,981	$92,253	$102,282	$20,079	$2,509
Separable costs	$111,483		$3,519	$101,316	$4,139	$2,509
Project costs	$68,120		$3,369	$58,664	$4,006	$2,081
Interest during construction	$2,252		$111	$1,940	$133	$68
Taxes included	$15,062			$15,062		
O.M. & R.—Capitalized	$26,049		$39	$25,650		$360
Remaining benefits	$117,621	$11,981	$88,734	$966	$15,940	
Percent distribution	100.00	10.19	75.44	0.82	13.55	
Remaining joint costs	$88,769	$9,047	$66,965	$726	$12,031	
Project costs	$82,793	$8,438	$62,457	$678	$11,220	
Interest during construction	$2,742	$279	$2,068	$22	$373	
O.M. & R.—Capitalized	$3,234	$330	$2,440	$26	$438	
Total allocation	$185,190	$9,047	$70,484	$86,980	$16,170	$2,509
Project costs	$150,913	$8,438	$65,826	$59,342	$15,226	$2,081
Interest during construction	$4,994	$279	$2,179	$1,962	$506	$68
O.M. & R.—Capitalized	$29,283	$330	$2,479	$25,676	$438	$360
Annual O.M. & R. (dollars)	$1,032,520	$11,620	$87,420	$905,340	$15,450	$12,690
Municipal water delivery system:						
Total	$19,698	$19,698				
Project costs	$13,761	$13,761				
Interest during construction	$455	$455				
O.M. & R.—Capitalized	$5,482	$5,482				
Annual O.M. & R. (dollars)	$193,280	$193,280				
Summary:						
Total allocated investment	$170,123	$22,933	$68,005	$61,304	$15,732	$2,149
Project costs	$164,674	$22,199	$65,826	$59,342	$15,226	$2,081
Interest during construction	$5,449	$734	$2,179	$1,962	$506	$68
Annual O.M. & R. (dollars)	$1,225,800	$204,900	$87,420	$905,340	$15,450	$12,690

Allocation summary

Item	*Amount*
Net project cost	$164,674,000
Repayable interest during construction	2,696,000
Total investment	167,370,000
Nonreimbursable allocations:	
Flood control	15,226,000
Fish and wildlife	2,081,000
	17,307,000
Balance reimbursable	150,063,000
2.5 percent interest-bearing allocations:	
Commercial power:	
Project costs	59,342,000
Interest during construction	1,962,000
	61,304,000
Municipal water:	
Water supply:	
Project costs	8,438,000
Interest during construction	279,000
	8,717,000
Delivery system:	
Project costs	13,761,000
Interest during construction	455,000
	14,216,000
Noninterest bearing allocation, irrigation	65,826,000
Total reimbursable	$150,063,000

PROJECT REVENUES

Revenues for repayment of project costs will be derived from conservancy district ad valorem taxes, water and power sales, and payments to amortize the costs of the municipal water delivery system. Federal construction of this delivery system is to be undertaken only if it is not feasible for the communities involved to finance and construct the works themselves. In any case it is anticipated that the communities or the conservancy district would operate and maintain these works. In view of these circumstances the project feasibility studies separate the analysis of the municipal water delivery system from the basic project.

Taxes from the Southeastern Colorado Water Conservancy District will provide a major source of revenue. The assessed value of all taxable property in the district in 1958 amounted to more than $401,500,000. Of that total, about $310 million was in El Paso and Pueblo Counties which contain the cities of Colorado Springs and Pueblo. Review of past records of assessed values in the nine counties comprising the conservancy district shows significant increases over the past decade. It is anticipated that assessed values in the district will increase in the future at a rate of $7,900,000 annually or almost 2 percent a year. Impacts of the project may result in a considerably higher rate of growth.

Counties and their 1958 assessed value of property within the conservancy district are as follows:

County:	*Assessed value*
Pueblo	$148,506,516
Fremont	23,381,050
Crowley	5,607,180
Prowers	3,828,972
Kiowa	1,078,991
Bent	10,930,575
Chaffee	10,884,740
Otero	35,262,375
El Paso	162,041,130
Total	$401,521,529

With the Fryingpan-Arkansas project in operation, a 1-mill tax would be levied by the district. An allowance of $50,000 a year has been assumed for administrative expenses of the district. The remaining net revenues will then be available to assist in repayment of O. M. & R. and investment costs of irrigation and municipal water supply in the basic project.

Revenues from deliveries of irrigation water comprise service charges on additional Twin Lakes supply, regulation and summertime release of winter water, and new project water supplies. A charge of $5.40 an acre-foot is proposed for project water. It is planned that this rate would be varied over the repayment period in accordance with agricultural prices or economic conditions as permitted by law. The revised farm budget studies described previously support the $5.40 per acre-foot charge from the standpoint of the water users payment capacity. The proposed service charge for regulation of additional Twin Lakes importations is $3 an acre-foot. The corresponding proposed charge for regulation of winter water is $2.25 an acre-foot.

Project water for municipal and industrial use would be delivered at the Colorado Springs point of diversion at Canon City or from the Pueblo Reservoir at the regular project rate of $5.40 an acre-foot. A service charge of $2 an acre-foot is proposed for regulation of industrial water for the Colorado Fuel & Iron Corp.

Firm power and energy are planned to be delivered to load centers at an average rate of 6.5 mills per kilowatt-hour. The next table shows all sources and amounts of annual revenues.

POWER REPAYMENT

The power system average rate and repayment study, near the end of this statement, shows in detail all aspects of reimburseemnt of power costs. Power facilities of the project are entered into plant-in-service in the year in which they become revenue producing. The total investment of $61,304,000 accrues over the last 9 years of the construction period, fiscal years 1966 to 1974. The cost of each facility is amortized with interest at 2.5 percent within 50 years from the time it begins to produce revenues. In fact, the total power allocation is amortized in an overall period of 50 years comprising 8 years during project construction and 42 years thereafter.

Upon retirement of the power investment, net annual power revenues are applied for 10 years to assist in the repayment of irrigation costs in a total amount of $17,588,510. This assistance accrues from the 42d to the 51st year after completion of project construction. A surplus of $1,819,466 from power revenues occurs in the 51st year of full project operations.

MUNICIPAL WATER REPAYMENT

Amortization of costs allocated to municipal and industrial water is shown in two components on the payout study at the end of this statement. The cost of the delivery system, consisting of pipelines and appurtenant works to Colorado Springs and Arkansas Valley towns, is repaid within 50 years with interest at 2.5 percent by a fixed annual amount of $501,300. These features are fully entered into plant-in-service in fiscal year 1969 and the investment is retired in year 2017.

Annual revenues

Function and source of revenue:	Amount
Irrigation:	
Project water (49,500 acre-feet at $5.40)	$267,300
Twin Lakes service (11,800 acre-feet at $3)	35,400
Regulation of winter water (65,900 acre-feet at $2.25)	148,275
Conservancy district tax	[1] 530,950
Subtotal	981,925
Less O.M. & R. costs	87,420
Net irrigation revenues	894,505

[1] Average of tax revenues applied to irrigation over repayment period following partial operations during construction.

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530, 950
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87, 420
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PAYOUT STUDY

FRYINGPAN–ARKANSAS PROJECT–COLORADO

(BASED ON 2.5 PERCENT INTEREST)

Year of Study	Fiscal year	BASIC PROJECT: POWER: Net operating revenues $	POWER: Repayment components of net power revenues: Interest 2.5% $	POWER: Repayment components of net power revenues: Excess over interest $	POWER: Investment Repayment: Interest bearing: Electric plant $	POWER: Investment Repayment: Interest bearing: Balance to be repaid $	POWER: Investment Repayment: Interest free: Portion of irrigation investment paid by power $	IRRIGATION: Net revenues $	IRRIGATION: Portion of irrigation investment paid by irrigation revenues $	IRRIGATION: Balance to be repaid $	MUNICIPAL AND INDUSTRIAL WATER SUPPLY: Net revenues $	MUNICIPAL AND INDUSTRIAL WATER SUPPLY: Repayment components of net revenues: Interest 2.5% $	MUNICIPAL AND INDUSTRIAL WATER SUPPLY: Repayment components of net revenues: Excess over interest $	MUNICIPAL AND INDUSTRIAL WATER SUPPLY: Interest bearing investment $	MUNICIPAL AND INDUSTRIAL WATER SUPPLY: Balance to be repaid $	RECAPITULATION: Net project revenues $	RECAPITULATION: Surplus $	MUNICIPAL AND INDUSTRIAL WATER DELIVERY SYSTEM: Net revenues $	MUNICIPAL AND INDUSTRIAL WATER DELIVERY SYSTEM: Repayment components of net revenues: Interest 2.5% $	MUNICIPAL AND INDUSTRIAL WATER DELIVERY SYSTEM: Repayment components of net revenues: Excess over interest $	MUNICIPAL AND INDUSTRIAL WATER DELIVERY SYSTEM: Investment $	MUNICIPAL AND INDUSTRIAL WATER DELIVERY SYSTEM: Balance to be repaid $	SUMMARY: Net project revenues $	SUMMARY: Surplus $	Year of study
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
0	1966				9,587,000				232,000					2,389,000							7,485,000				
1	1967	45,810	239,675	(193,865)	10,100,000	10,893,865	84,000		11,600,000	11,548,800	271,500	59,725	211,775	6,082,000	5,870,225	317,310	-0-	200,000	187,125	12,875	10,000,000	9,987,125	517,310	-0-	0
2	1968	1,201,520	257,347	944,173	25,195,000	24,444,692	4,200,000	51,200	14,456,000	14,303,600	286,200	146,756	139,444	6,082,000	5,730,781	1,538,920		450,000	249,678	200,322	12,000,000	11,786,803	1,988,920		1
3	1969	805,325	611,117	194,208	26,486,000	25,541,484	5,271,000	101,200	37,470,000	36,966,330	286,200	143,270	142,930	8,080,000	7,585,851	1,192,725		475,000	294,670	180,330	14,216,000	13,822,473	1,667,725		2
4	1970	843,825	638,537	205,288	31,009,000	29,859,196	13,663,000	331,270	37,470,000	36,966,330	310,100	189,646	120,454	8,080,000	7,465,397	1,485,195		501,300	345,562	155,738	14,216,000	13,666,735	1,986,495		3
5	1971	2,304,280	746,479	1,557,801	40,596,000	37,888,395	16,325,000	366,170	44,770,000	43,920,160	310,100	186,635	123,465	8,514,000	7,775,932	2,980,550		501,300	341,668	159,632	14,216,000	13,507,103	3,481,850		4
6	1972	2,167,025	947,209	1,219,816	48,046,000	44,118,579	17,588,510	538,780	48,237,490	46,848,870	314,380	194,398	119,982	8,514,000	7,655,950	3,020,185		501,300	337,678	163,622	14,216,000	13,343,481	3,521,485		5
7	1973	2,358,550	1,102,964	1,255,586	59,443,000	54,259,993	17,588,510	597,810	48,237,490	46,251,060	314,380	191,399	122,981	8,717,000	7,737,959	3,270,740		501,300	333,587	167,713	14,216,000	13,175,768	3,772,040		6
8	1974	2,144,460	1,356,500	787,960	61,304,000	55,333,033	17,588,510	631,455	48,237,490	45,619,605	317,080	193,399	123,681	8,717,000	7,612,288	3,092,995	-0-	501,300	329,394	171,906	14,216,000	13,003,862	3,594,295	-0-	7
Subtotal End of constr.		11,870,795	5,899,828	5,970,969	61,304,000	55,333,033	17,588,510	2,617,885	48,237,490	45,619,605	2,409,940	1,305,228	1,104,712	8,717,000	7,612,288	16,898,620	-0-	3,631,500	2,419,362	1,212,138	14,216,000	13,003,862	20,530,120	-0-	8
9	1975	2,144,460	1,383,326	761,134	61,304,000	54,571,899	17,588,510	637,355	48,237,490	44,980,250	317,080	190,307	126,773	8,717,000	7,485,515	3,100,895	-0-	501,300	325,097	176,203	14,216,000	12,827,659	3,602,195	-0-	9
10	1976		1,364,297	780,163		53,791,736		647,255		44,332,995		187,138	129,942		7,355,573	3,108,795			320,691	180,609		12,647,050	3,610,095		10
11	1977		1,344,793	799,667		52,992,069		653,155		43,677,840		183,889	133,191		7,222,382	3,116,695			316,176	185,124		12,461,926	3,617,995		11
12	1978		1,324,802	819,658		52,172,411		663,055		43,014,785		180,560	130,320		7,085,862	3,124,595			311,548	189,752		12,272,174	3,625,895		12
13	1979		1,304,310	840,150		51,336,261		670,955		42,343,830		177,147	139,933		6,945,929	3,132,495			306,804	194,496		12,077,678	3,633,795		13
14	1980		1,283,307	861,153		50,471,108		678,855		41,664,975		173,648	143,432		6,802,497	3,140,395			301,942	199,358		11,878,320	3,641,695		14
15	1981		1,261,778	882,682		49,588,426		686,755		40,978,220		170,062	147,018		6,655,479	3,148,295			296,958	204,342		11,673,978	3,649,595		15
16	1982		1,239,711	904,749		48,683,677		694,655		40,283,565		166,387	150,693		6,504,786	3,156,195			291,849	209,451		11,464,527	3,657,495		16
17	1983		1,217,092	927,368		47,756,309		702,555		39,581,010		162,620	154,460		6,350,326	3,164,095			286,613	214,687		11,249,840	3,665,395		17
18	1984		1,193,908	950,552		46,805,757		710,455		38,870,555		158,758	158,322		6,192,004	3,171,995			281,246	220,054		11,029,786	3,673,295		18
19	1985		1,170,144	974,376		45,831,441		718,355		38,152,200		154,800	162,280		6,029,724	3,179,895			275,745	225,555		10,804,231	3,681,195		19
20	1986		1,145,786	998,674		44,832,767		726,255		37,425,945		150,743	166,337		5,863,387	3,187,795			270,106	231,194		10,573,037	3,689,095		20
21	1987		1,120,819	1,023,641		43,809,126		734,155		36,691,790		146,585	170,495		5,692,892	3,195,695			264,326	236,974		10,336,063	3,696,995		21
22	1988		1,095,228	1,049,232		42,759,894		742,055		35,949,735		142,322	174,758		5,518,134	3,203,595			258,402	242,898		10,093,165	3,704,895		22
23	1989		1,068,997	1,075,463		41,684,431		749,955		35,199,780		137,953	179,127		5,339,007	3,211,495			252,329	248,971		9,844,194	3,712,795		23
24	1990		1,042,111	1,102,349		40,582,082		757,855		34,441,925		133,475	183,605		5,155,402	3,219,395			246,105	255,195		9,588,999	3,720,695		24
25	1991		1,041,552	1,129,908		39,452,174		765,755		33,676,170		128,885	188,195		4,967,207	3,227,295			239,725	261,375		9,327,424	3,728,595		25
26	1992		986,304	1,158,156		38,294,018		773,655		32,902,515		124,180	192,900		4,774,307	3,235,195			233,186	268,114		9,059,310	3,736,495		26
27	1993		957,350	1,187,110		37,106,908		781,555		32,120,960		119,358	197,722		4,576,585	3,243,095			226,483	274,817		8,784,493	3,744,395		27
28	1994		927,673	1,216,787		35,890,121		789,455		31,331,505		114,415	202,665		4,373,920	3,250,995			219,612	281,688		8,502,805	3,752,295		28
29	1995		897,253	1,247,207		34,642,914		797,355		30,534,150		109,348	207,732		4,166,188	3,258,895			212,570	288,730		8,214,075	3,760,195		29
30	1996		866,083	1,278,387		33,364,527		850,255		29,728,095		104,155	212,925		3,953,263	3,266,795			205,332	295,948		7,918,127	3,768,095		30
31	1997		834,113	1,310,347		32,054,180		813,155		28,915,740		98,832	218,248		3,735,015	3,274,695			197,953	303,347		7,614,780	3,775,995		31
32	1998		801,355	1,343,105		30,711,075		821,055		28,094,685		93,375	223,705		3,511,310	3,282,595			190,370	310,930		7,303,850	3,783,895		32
33	1999		767,777	1,376,683		29,334,392		828,955		27,265,730		87,783	229,297		3,282,013	3,290,495			182,596	318,704		6,985,146	3,792,795		33
34	2000		733,360	1,411,100		27,923,292		836,855		26,428,875		82,050	235,030		3,046,983	3,298,395			174,629	326,671		6,658,475	3,799,695		34
35	2001		698,082	1,446,378		26,476,914		844,755		25,584,120		76,175	240,905		2,806,078	3,306,295			166,462	334,838		6,323,637	3,807,595		35
36	2002		661,923	1,482,537		24,994,377		852,655		24,731,465		70,152	246,928		2,559,150	3,314,195			158,091	343,209		5,980,428	3,815,495		36
37	2003		624,859	1,519,601		23,474,776		860,555		23,870,910		63,979	253,101		2,306,049	3,322,095			149,511	351,789		5,628,639	3,823,395		37
38	2004		586,869	1,557,591		21,917,185		868,455		23,002,455		57,651	259,429		2,046,620	3,329,995			140,716	360,584		5,268,055	3,831,295		38
39	2005		547,930	1,596,530		20,320,655		876,355		22,126,100		51,166	265,914		1,780,706	3,337,895			131,701	369,599		4,898,456	3,839,195		39
40	2006		508,016	1,636,444		18,684,211		884,255		21,241,845		44,518	272,562		1,508,144	3,345,795			122,461	378,839		4,519,617	3,847,095		40
41	2007		467,105	1,677,355		17,006,856		892,155		20,349,690		37,704	279,376		1,228,768	3,353,695			112,990	388,310		4,131,307	3,854,995		41
42	2008		425,176	1,719,289		15,287,567		900,055		19,449,635		30,719	286,361		942,407	3,361,595			103,283	398,017		3,733,290	3,862,895		42
43	2009		382,189	1,762,276		13,525,296		907,955		18,541,680		23,560	293,520		648,887	3,369,495			93,332	407,968		3,325,322	3,870,795		43
44	2010		338,132	1,806,328		11,718,968		915,855		17,625,825		16,222	300,858		348,029	3,377,395			83,133	418,167		2,907,155	3,878,695		44
45	2011		292,974	1,851,486		9,867,482		923,755		16,702,070	317,080	8,701	308,379		39,650	3,385,295			72,679	428,621		2,478,534	3,886,595		45
46	2012		246,687	1,897,773		7,969,709		1,141,655		15,560,415	40,641	991	39,650		-0-	3,326,756			61,963	439,337		2,039,197	3,808,056		46
47	2013		199,243	1,945,217		6,024,492		1,149,555		14,410,860	-0-	-0-	-0-			3,294,015			50,980	450,320		1,588,877	3,795,315		47
48	2014		150,612	1,993,848		4,030,644		1,157,455		13,253,405						3,301,915			39,722	461,578		1,127,299	3,803,215		48
49	2015		100,766	2,043,694		1,986,950	17,588,510	1,165,355		12,089,050						3,309,815			28,182	473,118		654,181	3,811,115		49
50	2016		49,674	1,986,950		-0-	17,480,674	1,173,255		10,914,795						3,317,715		501,300	16,355	484,945		169,236	3,819,015		50
51	2017		-0-	-0-			15,336,214	1,181,155		9,733,540						3,325,615		173,467	4,231	169,236		-0-	3,499,082		51
52	2018						13,191,754	1,189,055		8,544,585						3,333,515		-0-	-0-	-0-			3,333,515		52
53	2019						11,047,294	1,196,955		7,347,630						3,341,415							3,341,415		53
54	2020						8,902,834	1,204,855		6,142,775						3,349,315							3,349,315		54
55	2021						6,758,374	1,212,755		4,930,020						3,357,215							3,357,215		55
56	2022						4,613,914	1,220,655		3,709,365						3,365,115							3,365,115		56
57	2023						2,469,454	1,228,555		2,480,810						3,373,015							3,373,015		57
58	2024						324,994	1,236,455		1,244,355						3,380,915	-0-						3,380,915	-0-	58
59	2025	2,144,460	-0-	-0-	61,304,000	-0-	-0-	1,244,355	48,237,490	-0-	-0-	-0-	-0-	8,717,000	-0-	3,388,815	1,819,466	-0-					3,388,815	1,819,466	59
Totals		121,238,255	40,526,279	61,304,000	61,304,000	-0-	-0-	48,237,490	48,237,490	-0-	14,182,541	5,465,541	8,717,000	8,717,000	-0-	183,658,286	1,819,466	24,859,567	10,643,567	14,216,000	14,216,000	-0-	208,517,853	1,819,466	

Total project cost $169,905,000
Less portion of cost of Ruedi Dam and Reservoir. . . 5,221,000
Net project cost $164,684,000
Repayable interest during construction 2,686,000
Total project investment $167,370,000
Less nonreimbursable allocations:
Flood control. 15,226,000
Fish and Wildlife. 2,081,000
Balance reimbursable $150,063,000

SUMMARY OF COST ALLOCATIONS AND REPAYMENT

2.5 percent interest bearing allocations

Commercial power:
Project cost. . . . . $ 59,342,000
Interest during construction. . 1,962,000 $ 61,304,000

Municipal and industrial water:
Water supply:
Project cost. . . . . $ 8,438,000
Interest during construction. . 279,000 8,717,000

Repayment of irrigation costs:
By Conservancy District. $48,237,490
By power revenues. 17,588,510
Total. $65,826,000

Study	year	Net operating revenues	net power revenues		Interest bearing		Interest free	Net revenues	Irrigation investment paid by irrigation revenues	Balance to be repaid	Net revenues	Use of net revenues		Interest bearing investment	Balance to be repaid	Net project revenues	Surplus
			Interest 2.5%	Excess over interest	Electric plant	Balance to be repaid	Portion of irrigation investment paid by power					Interest 2.5%	Excess over interest				
		$	$	$	$	$	$	$	$	$	$	$	$	$	$	$	$
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
0	1966				9,587,000									2,389,000			
1	1967	45,810	239,675	(193,865)	10,100,000	10,893,865	84,000		232,000		271,500	59,725	211,775	6,082,000	5,870,225	317,310	-0-
2	1968	1,201,520	257,347	944,173	25,195,000	24,444,692	4,200,000	51,200	11,600,000	11,548,800	286,200	146,756	139,444	6,082,000	5,730,781	1,538,920	
3	1969	805,325	611,117	194,208	26,486,000	25,541,884	5,271,000	101,200	14,456,000	14,303,600	286,200	143,270	142,930	8,080,000	7,585,851	1,192,725	
4	1970	843,825	638,537	205,288	31,009,000	29,859,196	13,663,000	131,270	37,470,000	36,986,330	310,100	189,646	120,454	8,080,000	7,465,397	1,485,195	
5	1971	2,304,280	746,479	1,557,801	40,596,000	37,888,395	16,325,000	366,170	44,770,000	43,920,160	310,100	186,635	123,465	8,514,000	7,775,932	2,980,550	
6	1972	2,167,025	947,209	1,219,816	48,046,000	44,118,579	17,588,510	538,780	48,237,490	46,848,870	314,380	194,398	119,982	8,514,000	7,655,950	3,020,185	
7	1973	2,358,550	1,102,964	1,255,586	59,443,000	54,259,993	17,588,510	597,810	48,237,490	46,251,060	314,380	191,399	122,981	8,717,000	7,733,959	3,270,740	
8	1974	2,144,460	1,356,500	787,960	61,304,000	55,333,033	17,588,510	631,455	48,237,490	45,619,605	317,080	193,399	123,681	8,717,000	7,812,208	3,092,995	-0-
Subtotal End of constr		11,870,795	5,899,828	5,970,969	61,304,000	55,333,033	17,588,510	2,617,885	48,237,490	45,619,605	2,409,940	1,305,228	1,104,712	8,717,000	7,612,288	16,898,620	-0-
9	1975	2,144,460	1,383,326	761,134	61,304,000	54,571,899	17,588,510	639,355	48,237,490	44,980,250	317,080	190,307	126,773	8,717,000	7,485,515	3,100,895	-0-
10	1976		1,364,297	780,163		53,791,736		647,255		44,332,995		187,138	129,942		7,355,573	3,108,795	
11	1977		1,344,793	799,667		52,992,069		655,155		43,677,840		183,889	133,191		7,222,382	3,116,695	
12	1978		1,324,802	819,658		52,172,411		663,055		43,014,785		180,560	136,520		7,085,862	3,124,595	
13	1979		1,304,310	840,150		51,332,261		670,955		42,343,830		177,147	139,933		6,945,929	3,132,495	
14	1980		1,283,307	861,133		50,471,128		678,855		41,664,975		173,648	143,432		6,802,497	3,140,395	
15	1981		1,261,778	882,682		49,588,426		686,755		40,978,220		170,062	147,018		6,655,479	3,148,295	
16	1982		1,239,711	904,749		48,683,677		694,655		40,283,565		166,387	150,693		6,504,786	3,156,195	
17	1983		1,217,092	927,368		47,756,309		702,555		39,581,010		162,620	154,460		6,350,326	3,164,095	
18	1984		1,193,908	950,552		46,805,757		710,455		38,870,555		158,758	158,322		6,192,004	3,171,995	
19	1985		1,170,144	974,376		45,831,441		718,355		38,152,200		154,800	162,280		6,029,724	3,179,895	
20	1986		1,145,786	998,674		44,832,767		726,255		37,425,945		150,743	166,337		5,863,387	3,187,795	
21	1987		1,120,819	1,023,641		43,809,126		734,155		36,691,790		146,583	170,495		5,692,892	3,195,695	
22	1988		1,095,228	1,049,232		42,759,894		742,055		35,949,735		142,322	174,758		5,518,134	3,203,595	
23	1989		1,068,997	1,075,463		41,684,431		749,955		35,199,780		137,953	179,127		5,339,007	3,211,495	
24	1990		1,042,111	1,102,349		40,582,082		757,855		34,441,925		133,475	183,605		5,155,402	3,219,395	
25	1991		1,014,552	1,129,908		39,452,174		765,755		33,676,170		128,885	188,195		4,967,207	3,227,295	
26	1992		986,304	1,158,156		38,294,018		773,655		32,902,515		124,180	192,900		4,774,307	3,235,195	
27	1993		957,350	1,187,110		37,106,908		781,555		32,120,960		119,358	197,722		4,576,585	3,243,095	
28	1994		927,673	1,216,787		35,890,121		789,455		31,331,505		114,415	202,665		4,373,920	3,250,995	
29	1995		897,253	1,247,207		34,642,914		797,355		30,534,150		109,348	207,732		4,166,188	3,258,895	
30	1996		866,083	1,278,387		33,364,527		850,255		29,728,095		104,155	212,925		3,953,263	3,266,795	
31	1997		834,113	1,310,347		32,054,180		813,155		28,915,740		98,832	218,248		3,735,015	3,274,695	
32	1998		801,355	1,343,105		30,711,075		821,055		28,094,685		93,375	223,705		3,511,310	3,282,595	
33	1999		767,777	1,376,683		29,334,392		828,955		27,265,730		87,783	229,297		3,282,013	3,290,495	
34	2000		733,360	1,411,100		27,923,292		836,855		26,428,875		82,050	235,030		3,046,983	3,298,395	
35	2001		698,082	1,446,378		26,476,914		844,755		25,584,120		76,175	240,905		2,806,078	3,306,295	
36	2002		661,923	1,482,537		24,994,377		852,655		24,731,465		70,152	246,928		2,559,150	3,314,195	
37	2003		624,859	1,519,601		23,474,776		860,555		23,870,910		63,979	253,101		2,306,049	3,322,095	
38	2004		586,869	1,557,591		21,917,185		868,455		23,002,455		57,651	259,429		2,046,620	3,329,995	
39	2005		547,930	1,596,530		20,320,655		876,355		22,126,100		51,166	265,914		1,780,706	3,337,895	
40	2006		508,016	1,636,444		18,684,211		884,255		21,241,845		44,518	272,562		1,508,144	3,345,795	
41	2007		467,105	1,677,355		17,006,856		892,155		20,349,690		37,704	279,376		1,228,768	3,353,695	
42	2008		425,176	1,719,289		15,287,567		900,055		19,449,635		30,719	286,361		942,407	3,361,595	
43	2009		382,189	1,762,276		13,525,296		907,955		18,541,680		23,560	293,520		648,887	3,369,495	
44	2010		338,132	1,806,328		11,718,968		915,855		17,625,825		16,222	300,938		348,029	3,377,395	
45	2011		292,974	1,851,486		9,867,482		923,755		16,702,070	317,080	8,701	308,377		39,650	3,385,295	
46	2012		246,687	1,897,773		7,969,709		1,141,655		15,560,415	40,641	991	39,650		-0-	3,326,756	
47	2013		199,243	1,945,217		6,024,492		1,149,555		14,410,860	-0-	-0-	-0-			3,294,015	
48	2014		150,612	1,993,848		4,030,644		1,157,455		13,253,405						3,301,915	
49	2015		100,766	2,043,694		1,986,950	17,588,510	1,165,355		12,088,050						3,309,815	
50	2016		49,674	1,986,950		-0-	17,480,674	1,173,255		10,914,795						3,317,715	
51	2017		-0-	-0-			15,336,214	1,181,155		9,733,640						3,325,615	
52	2018						13,191,754	1,189,055		8,544,585						3,333,515	
53	2019						11,047,294	1,196,955		7,347,630						3,341,415	
54	2020						8,902,834	1,204,855		6,142,775						3,349,315	
55	2021						6,758,374	1,212,755		4,930,020						3,357,215	
56	2022						4,613,914	1,220,655		3,709,365						3,365,115	
57	2023						2,469,454	1,228,555		2,480,810						3,373,015	
58	2024						324,994	1,236,455		1,244,355						3,380,915	-0-
59	2025	2,144,460	-0-	-0-	61,304,000	-0-	-0-	1,244,355	48,237,490	-0-	-0-	-0-	-0-	8,717,000	-0-	3,388,815	1,819,466
Totals		121,238,255	40,526,279	61,304,000	61,304,000	-0-	-0-	48,237,490	48,237,490	-0-	14,182,541	5,465,541	8,717,000	8,717,000	-0-	183,658,286	1,819,466

Net revenues	Interest 2.5%	Excess over interest	Investment	Balance to be repaid	Net project revenues	Surplus	Year of study
$	$	$	$	$	$	$	
(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
			7,485,000				0
200,000	187,125	12,875	10,000,000	9,987,125	517,310	-0-	1
450,000	249,678	200,322	12,000,000	11,786,803	1,988,920		2
475,000	294,670	180,330	14,216,000	13,822,473	1,667,725		3
501,300	345,562	155,738	14,216,000	13,666,735	1,986,495		4
501,300	341,668	159,632	14,216,000	13,507,103	3,481,850		5
501,300	337,678	163,622	14,216,000	13,343,481	3,521,485		6
501,300	333,587	167,713	14,216,000	13,175,768	3,772,040		7
501,300	329,394	171,906	14,216,000	13,003,862	3,594,295	-0-	8
3,631,500	2,419,362	1,212,138	14,216,000	13,003,862	20,530,120	-0-	
501,300	325,097	176,203	14,216,000	12,827,659	3,602,195	-0-	9
	320,691	180,609		12,647,050	3,610,095		10
	316,176	185,124		12,461,926	3,617,995		11
	311,548	189,752		12,272,174	3,625,895		12
	306,804	194,496		12,077,678	3,633,795		13
	301,942	199,358		11,878,320	3,641,695		14
	296,958	204,342		11,673,978	3,649,595		15
	291,849	209,451		11,464,527	3,657,495		16
	286,613	214,687		11,249,840	3,665,395		17
	281,246	220,054		11,029,786	3,673,295		18
	275,745	225,555		10,804,231	3,681,195		19
	270,106	231,194		10,573,037	3,689,095		20
	264,326	236,974		10,336,063	3,696,995		21
	258,402	242,898		10,093,165	3,704,895		22
	252,329	248,971		9,844,194	3,712,795		23
	246,105	255,195		9,588,999	3,720,695		24
	239,725	261,575		9,327,424	3,728,595		25
	233,186	268,114		9,059,310	3,736,495		26
	226,483	274,817		8,784,493	3,744,395		27
	219,612	281,688		8,502,805	3,752,295		28
	212,570	288,730		8,214,075	3,760,195		29
	205,352	295,948		7,918,127	3,768,099		30
	197,953	303,347		7,614,780	3,775,995		31
	190,370	310,930		7,303,850	3,783,895		32
	182,596	318,704		6,985,146	3,791,795		33
	174,629	326,671		6,658,475	3,799,695		34
	166,462	334,838		6,323,637	3,807,595		35
	158,091	343,209		5,980,428	3,815,495		36
	149,511	351,789		5,628,639	3,823,395		37
	140,716	360,584		5,268,055	3,831,295		38
	131,701	369,599		4,898,456	3,839,195		39
	122,461	378,839		4,519,617	3,847,095		40
	112,990	388,310		4,131,307	3,854,995		41
	103,283	398,017		3,733,290	3,862,895		42
	93,332	407,968		3,325,322	3,870,795		43
	83,133	418,167		2,907,155	3,878,695		44
	72,679	428,621		2,478,534	3,886,595		45
	61,963	439,337		2,039,197	3,808,056		46
	50,980	450,320		1,588,877	3,795,315		47
	39,722	461,578		1,127,299	3,803,215		48
	28,182	473,118		654,181	3,811,115		49
501,300	16,355	484,945		169,236	3,819,015		50
173,467	4,231	169,236		-0-	3,499,082		51
-0-	-0-	-0-			3,333,515		52
					3,341,415		53
					3,349,315		54
					3,357,215		55
					3,365,115		56
					3,373,015		57
					3,380,915	-0-	58
-0-					3,388,815	1,819,466	59
24,859,567	10,643,567	14,216,000	14,216,000	-0-	208,517,853	1,819,466	

SUMMARY OF COST ALLOCATIONS AND REPAYMENT

Total project cost $169,905,000
Less portion of cost of Ruedi Dam and Reservoir. . . 5,831,000
Net project cost $164,074,000
Repayable interest during construction 2,696,000
Total project investment $167,370,000
Less nonreimbursable allocations:
Flood control. 15,226,000
Fish and Wildlife. 2,081,000
Balance reimbursable $150,063,000

2.5 percent interest bearing allocations
Commercial power:
Project cost. . . . . $ 59,342,000
Interest during construction. . 1,962,000 $ 61,304,000
Municipal and industrial water:
Water supply:
Project cost. . . . . $ 8,438,000
Interest during construction. . 272,000 8,717,000
Municipal water delivery system:
Project cost. . . . . $ 13,761,000
Interest during construction. . 455,000 14,216,000
Noninterest bearing allocation:
Irrigation. 65,826,000
Total reimbursable allocations. $150,063,000

Repayment of irrigation costs:
By Conservancy District. $48,237,490
By power revenues. 17,588,510
Total. $65,826,000

10/15/59

POWER SYSTEM AVERAGE RATE AND REPAYMENT STUDY

FRYINGPAN-ARKANSAS PROJECT — COLORADO

(BASED ON 2.5 PER CENT INTEREST)

Year of study	Fiscal year	ELECTRIC ENERGY SALES (MILLIONS KWH)	OPERATING REVENUES	REVENUE DEDUCTIONS			Net revenues	INVESTMENT REPAYMENT FROM POWER REVENUES						Earned surplus (cumulative)	ALLOWABLE UNPAID BALANCE		Fiscal year	Year of study
								Interest bearing allocation to commercial electric plant				Interest free aid to irrigation plant							
		Firm	Firm @ 6.5 mills	Operation maintenance and overhead	Provision for replacement 2.5%	Total		Interest 2.5%	Principal	Revenue producing at end of year	Balance to be repaid	Required aid	Balance to be repaid		Commercial electric plant	Irrigation plant		
			$	$	$	$	$	$	$	$	$	$	$	$	$	$		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
0	1966									9,587,000					9,587,000		1966	0
1	1967	21.3	138,450	39,900	52,740	92,640	45,810	239.675	(193,865)	10,100,000	10,293,865	84,000	84,000	-0-	10,100,000	84,000	1967	1
2	1968	208.4	1,354,600	97,950	55,130	153,080	1,201,520	257,347	944,173	25,195,000	24,444,692	4,200,000	4,200,000		25,195,000	4,200,000	1968	2
3	1969	165.2	1,073,800	213,345	55,130	268,475	805,325	611,117	194,208	26,486,000	25,541,484	5,271,000	5,271,000		26,486,000	5,271,000	1969	3
4	1970	185.2	1,203,800	256,475	103,500	359,975	843,825	638,537	205,288	31,009,000	29,859,196	13,663,000	13,663,000		31,009,000	13,663,000	1970	4
5	1971	417.4	2,713,100	283,620	125,200	408,820	2,304,280	746,479	1,557,801	40,596,000	37,888,395	16,325,000	16,325,000		40,596,000	16,325,000	1971	5
6	1972	426.4	2,771,600	361,015	243,560	604,575	2,167,025	947,209	1,219,816	48,046,000	44,118,579	17,588,510	17,588,510		48,046,000	17,588,510	1972	6
7	1973	461.9	3,002,350	370,820	272,980	643,800	2,358,550	1,102,964	1,255,586	59,443,000	54,259,993	17,588,510	17,588,510		59,443,000	17,588,510	1973	7
8	1974	469.2	3,049,800	521,570	383,770	905,340	2,144,460	1,356,500	787,960	61,304,000	55,333,033	17,588,510	17,588,510	-0-	61,304,000	17,588,510	1974	8
Subtotal End of const.		2,355.0	15,307,500	2,144,695	1,292,010	3,436,705	11,870,795	5,899,828	5,970,967	61,304,000	55,333,033	17,588,510	17,588,510	-0-	61,304,000	17,588,510	Subtotal End of Const.	
9	1975	469.2	3,049,800	521,570	383,770	905,340	2,144,460	1,383,326	761,134	61,304,000	54,571,899	17,588,510	17,588,510	-0-	61,304,000	17,588,510	1975	9
10	1976							1,364,297	780,163		53,791,736						1976	10
11	1977							1,344,793	799,667		52,992,069						1977	11
12	1978							1,324,802	819,658		52,172,411						1978	12
13	1979							1,304,310	840,150		51,332,261						1979	13
14	1980							1,283,307	861,153		50,471,108						1980	14
15	1981							1,261,778	882,682		49,588,426						1981	15
16	1982							1,239,711	904,749		48,683,677						1982	16
17	1983							1,217,092	927,368		47,756,309						1983	17
18	1984							1,193,908	950,552		46,805,757						1984	18
19	1985							1,170,144	974,316		45,831,441						1985	19
20	1986							1,145,786	998,674		44,832,767						1986	20
21	1987							1,120,819	1,023,641		43,809,126						1987	21
22	1988							1,095,228	1,049,232		42,759,894						1988	22
23	1989							1,068,997	1,075,463		41,684,431						1989	23
24	1990							1,042,111	1,102,349		40,582,082						1990	24
25	1991							1,014,552	1,129,908		39,452,174						1991	25
26	1992							986,304	1,158,156		38,294,018						1992	26
27	1993							957,350	1,187,110		37,106,908						1993	27
28	1994							927,673	1,216,787		35,890,121						1994	28
29	1995							897,253	1,247,207		34,642,914						1995	29
30	1996							866,073	1,278,387		33,364,527						1996	30
31	1997							834,113	1,310,347		32,054,180						1997	31
32	1998							801,355	1,343,105		30,711,075						1998	32
33	1999							767,777	1,376,683		29,334,392						1999	33
34	2000							733,360	1,411,100		27,923,292						2000	34
35	2001							698,082	1,446,378		26,476,914						2001	35
36	2002							661,923	1,482,537		24,994,377						2002	36
37	2003							624,859	1,519,601		23,474,776						2003	37
38	2004							586,869	1,557,591		21,917,185						2004	38
39	2005							547,930	1,596,530		20,320,655						2005	39
40	2006							508,016	1,636,444		18,684,211						2006	40
41	2007							467,105	1,677,355		17,006,856						2007	41
42	2008							425,171	1,719,289		15,287,567						2008	42
43	2009							382,189	1,762,271		13,525,296						2009	43
44	2010							338,132	1,806,328		11,718,968						2010	44
45	2011							292,974	1,851,486		9,867,482						2011	45
46	2012							246,687	1,897,773		7,969,709						2012	46
47	2013							199,243	1,945,217		6,024,492						2013	47
48	2014							150,612	1,993,848		4,030,644						2014	48
49	2015							100,766	2,043,694		1,986,950		17,588,510			61,304,000	2015	49
50	2016							49,674	1,986,950		-0-		17,480,674			51,717,000	2016	50
51	2017							-0-	-0-				15,336,214			51,204,000	2017	51
52	2018												13,191,754			36,109,000	2018	52
53	2019												11,047,294			34,818,000	2019	53
													8,902,834			30,295,000		54

Notes:

1. Col. 3 Sales of energy were estimated from hydrologic studies and Power Market data.
2. Col. 4 The average power rates required to produce annual revenues sufficient to pay all operation, maintenance, and overhead; provide a fund for replacement; repay the investment in commercial electric plant with interest @ 2.5%; and repay the portion of investment in irrigation plant assigned to power without interest are:

   Firm energy . . . . . 6.50 mills per kwh
3. Col. 5 Operation, maintenance and overhead were estimated as follows:

Arkansas Power Canal	$ 99,970
Powerplants, and penstocks	281,770
Transmission lines, substations and communication equipment	90,190
Allocation of joint facility O & M	660
Identifiable reservoir O & M for power	1,780
Contingencies	47,200
Total	$521,570

4. Col. 6 Requirement for provision for replacement @ 2.5% in 50 years were estimated as follows:

F.P.C. Acct. No.		
321	Structures and improvements	$ 11,860
322	Penstocks, gates, etc.	14,730
322	Reservoirs, dams, and waterways	4,170
323	Waterwheels, turbines, and generators	137,580
324-325	Miscellaneous powerplant, equipment, and electric equipment	60,060
343	Switchyards and substations	89,370
345-346	Transmission lines	57,320
378	Communication equipment	8,290
	Allocation of joint facility replacement	280
	Total	$383,490

5. Col. 11

Total Estimated Electric Plant Investment

Ruedi Dam and Reservoir	$ 7,600,000
Sugar Loaf Dam and Reservoir	6,063,000
Twin Lakes Dam and Reservoir	8,311,000
Salida Afterbay	708,000
Pueblo Dam and Reservoir	34,603,000
Salida Forebay	517,000
Hunter Creek Extension Dam and Canal	672,000
South Side Collection System	9,679,000
North Side Collection System	16,282,000
Fryingpan-Arkansas Divide Tunnel	9,213,000
Seavden Diversion Dam and Canal	1,030,000
Arkansas Power Canal:	
Kibert	4,186,000
Twin Lakes-Otero	1,867,000
Otero-Wapaco	2,996,000
Wapaco Diversion Dam and Canal	275,000
Wapaco-Princeton	4,194,000
Chalk Creek Diversion Dam and Canal	93,000
Princeton-Pancho	2,536,000
Pancho-Salida	1,785,000
Powerplants	25,323,000
Switchyards	4,384,000
Transmission lines	6,027,000

Col. 11 (continued)

Investment Allocation

(1) Fully reimbursable from power revenues:	
(a) Project costs	$ 59,342,000
(b) Interest during construction	1,962,000
Total - Interest bearing	$ 61,304,000
(2) Partially reimbursable from power revenues:	
(a) Irrigation investment	$ 65,826,000
(b) Borne by Conservancy District	48,237,490
Total - Noninterest bearing	$ 17,588,510
(3) Total reimbursable from power revenues	$ 78,892,510
(4) Other allocated portions:	
(a) Municipal and industrial water	$ 22,199,000
(b) Interest during construction	734,000
Total municipal water	$ 22,933,000
(c) Flood control	15,226,000
(d) Fish and wildlife	2,081,000
(5) Total project investment	$167,370,000

Year of study	Fiscal year	Firm $	Firm @ 6.5 mills $	Operation maintenance and overhead $	Provision for replacement 2.5% $	Total $	Net revenues $	Interest bearing allocation to commercial electric plant: Interest 2.5% $	Principal $	Revenue producing at end of year $	Balance to be repaid $	Interest free aid to irrigation plant: Required aid $	Balance to be repaid $	Earned surplus (cumulative) $	Commercial electric plant $	Irrigation plant $	Fiscal year	Year of study
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
0	1966									9,587,000					9,587,000		1966	0
1	1967	21.3	138,450	39,900	52,740	92,640	45,810	239.675	(193,865)	10,100,000	10,293,865	84,000	84,000	-0-	10,100,000	84,000	1967	1
2	1968	208.4	1,354,600	97,950	55,130	153,080	1,201,520	257,347	944,173	25,195,000	24,444,692	4,200,000	4,200,000		25,195,000	4,200,000	1968	2
3	1969	165.2	1,073,800	213,345	55,130	268,475	805,325	611,117	194,208	26,486,000	25,541,484	5,271,000	5,271,000		26,486,000	5,271,000	1969	3
4	1970	185.2	1,203,800	256,475	103,500	359,975	843,825	638,537	205,288	31,009,000	29,859,196	13,663,000	13,663,000		31,009,000	13,663,000	1970	4
5	1971	417.4	2,713,100	283,620	125,200	408,820	2,304,280	746,479	1,557,801	40,596,000	37,888,395	16,325,000	16,325,000		40,596,000	16,325,000	1971	5
6	1972	426.4	2,771,600	361,015	243,560	604,575	2,167,025	947,209	1,219,816	48,046,000	44,118,579	17,588,510	17,588,510		48,046,000	17,588,510	1972	6
7	1973	461.9	3,002,350	370,820	272,980	643,800	2,358,550	1,102,964	1,255,586	59,443,000	54,259,993	17,588,510	17,588,510		59,443,000	17,588,510	1973	7
8	1974	469.2	3,049,800	521,570	383,770	905,340	2,144,460	1,356,500	787,960	61,304,000	55,333,033	17,588,510	17,588,510	-0-	61,304,000	17,588,510	1974	8
Subtotal End of const.		2,355.0	15,307,500	2,144,695	1,292,010	3,436,705	11,870,795	5,899,828	5,970,967	61,304,000	55,333,033	17,588,510	17,588,510	-0-	61,304,000	17,588,510	Subtotal End of Const.	
9	1975	469.2	3,049,800	521,570	383,770	905,340	2,144,460	1,383,326	761,134	61,304,000	54,571,899	17,588,510	17,588,510	-0-	61,304,000	17,588,510	1975	9
10	1976							1,364,297	780,163		53,791,736						1976	10
11	1977							1,344,793	799,667		52,992,069						1977	11
12	1978							1,324,802	819,658		52,172,411						1978	12
13	1979							1,304,310	840,150		51,332,261						1979	13
14	1980							1,283,307	861,153		50,471,108						1980	14
15	1981							1,261,778	882,682		49,588,426						1981	15
16	1982							1,239,711	904,749		48,683,677						1982	16
17	1983							1,217,092	927,368		47,756,309						1983	17
18	1984							1,193,908	950,552		46,805,757						1984	18
19	1985							1,170,144	974,316		45,831,441						1985	19
20	1986							1,145,786	998,674		44,832,767						1986	20
21	1987							1,120,819	1,023,641		43,809,126						1987	21
22	1988							1,095,228	1,049,232		42,759,894						1988	22
23	1989							1,068,997	1,075,463		41,684,431						1989	23
24	1990							1,042,111	1,102,349		40,582,082						1990	24
25	1991							1,014,552	1,129,908		39,452,174						1991	25
26	1992							986,304	1,158,156		38,294,018						1992	26
27	1993							957,350	1,187,110		37,106,908						1993	27
28	1994							927,673	1,216,787		35,890,121						1994	28
29	1995							897,253	1,247,207		34,642,914						1995	29
30	1996							866,073	1,278,387		33,364,527						1996	30
31	1997							834,113	1,310,347		32,054,180						1997	31
32	1998							801,355	1,343,105		30,711,075						1998	32
33	1999							767,777	1,376,683		29,334,392						1999	33
34	2000							733,360	1,411,100		27,923,292						2000	34
35	2001							698,082	1,446,378		26,476,914						2001	35
36	2002							661,923	1,482,537		24,994,377						2002	36
37	2003							624,859	1,519,601		23,474,776						2003	37
38	2004							586,869	1,557,591		21,917,185						2004	38
39	2005							547,930	1,596,530		20,320,655						2005	39
40	2006							508,016	1,636,444		18,684,211						2006	40
41	2007							467,105	1,677,355		17,006,856						2007	41
42	2008							425,171	1,719,289		15,287,567						2008	42
43	2009							382,189	1,762,271		13,525,296						2009	43
44	2010							338,132	1,806,328		11,718,968						2010	44
45	2011							292,974	1,851,486		9,867,482						2011	45
46	2012							246,687	1,897,773		7,969,709						2012	46
47	2013							199,243	1,945,217		6,024,492						2013	47
48	2014							150,612	1,993,848		4,030,644						2014	48
49	2015							100,766	2,043,694		1,986,950						2015	49
50	2016							49,674	1,986,950		-0-						2016	50
51	2017							-0-	-0-								2017	51
52	2018																2018	52
53	2019																2019	53
54	2020																2020	54
55	2021																2021	55
56	2022																2022	56
57	2023																2023	57
58	2024																2024	58
59	2025	469.2	3,049,800	521,570	383,770	905,340	2,144,460	-0-	-0-	61,304,000	-0-	17,588,510	-0-	1,819,466	-0-	17,588,510	2025	59
Totals		26,284.2	170,847,300	28,744,765	20,864,280	49,609,045	121,238,255	40,526,279	61,304,000	61,304,000	-0-	17,588,510	-0-	1,819,466	-0-	17,588,510	Totals	

Notes:

1. Col. 3 Sales of energy were estimated from hydrologic studies and Power Market data.
2. Col. 4 The average power rates required to produce annual revenues sufficient to pay all operation, maintenance, and overhead; provide a fund for replacement; repay the investment in commercial electric plant with interest @ 2.5%; and repay the portion of investment in irrigation plant assigned to power without interest are:

   Firm energy . . . . . 6.50 mills per kwh

3. Col. 5 Operation, maintenance and overhead were estimated as follows:

Arkansas Power Canal	$ 99,970
Powerplants, and penstocks	281,770
Transmission lines, substations and communication equipment	90,190
Allocation of joint facility O & M	660
Identifiable reservoir O & M for power	1,780
Contingencies	47,200
Total	$521,570

4. Col. 6 Requirement for provision for replacement @ 2.5% in 50 years were estimated as follows:

F.P.C. Acct. No.		
321	Structures and improvements	$ 11,860
322	Penstocks, gates, etc.	14,730
322	Reservoirs, dams, and waterways	4,170
323	Waterwheels, turbines, and generators	137,580
324-325	Miscellaneous powerplant, equipment, and electric equipment	60,060
343	Switchyards and substations	89,370
345-346	Transmission lines	57,320
378	Communication equipment	8,290
	Allocation of joint facility replacement	280
	Total	$383,490

5. Col. 11

Total Estimated Electric Plant Investment

Ruedi Dam and Reservoir	$ 7,600,000
Sugar Loaf Dam and Reservoir	6,063,000
Twin Lakes Dam and Reservoir	8,311,000
Salida Afterbay	708,000
Pueblo Dam and Reservoir	34,603,000
Salida Forebay	517,000
Hunter Creek Extension Dam and Canal	672,000
South Side Collection System	9,679,000
North Side Collection System	16,282,000
Fryingpan-Arkansas Divide Tunnel	9,213,000
Busvden Diversion Dam and Canal	1,030,000
Arkansas Power Canal:	
Elbert	4,186,000
Twin Lakes-Otero	1,867,000
Otero-Wapaco	2,996,000
Wapaco Diversion Dam and Canal	275,000
Wapaco-Princeton	4,194,000
Chalk Creek Diversion Dam and Canal	93,000
Princeton-Pancho	2,536,000
Pancho-Salida	1,785,000
Powerplants	25,323,000
Switchyards	4,384,000
Transmission lines	6,027,000
Substations	1,523,000
General Property	1,046,000
Municipal Water Delivery System	13,761,000
Repayable interest during construction	2,696,000
Total	$167,370,000

Col. 11 (continued)

Investment Allocation

(1) Fully reimbursable from power revenues:	
(a) Project costs	$ 59,342,000
(b) Interest during construction	1,962,000
Total - Interest bearing	$ 61,304,000
(2) Partially reimbursable from power revenues:	
(a) Irrigation investment	$ 65,826,000
(b) Borne by Conservancy District	48,237,490
Total - Noninterest bearing	$ 17,588,510
(3) Total reimbursable from power revenues	$ 78,892,510
(4) Other allocated portions:	
(a) Municipal and industrial water	$ 22,199,000
(b) Interest during construction	734,000
Total municipal water	$ 22,933,000
(c) Flood control	15,226,000
(d) Fish and wildlife	2,081,000
(5) Total project investment	$167,370,000

17,588,510	61,304,000	
17,480,674	51,717,000	
15,336,214	51,204,000	
13,191,754	36,109,000	
11,047,294	34,818,000	
8,902,834	30,295,000	
6,758,374	20,708,000	
4,613,914	13,258,000	
2,469,454	1,861,000	
324,994	-0-	

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Function and source of revenue—Continued	Amount
Power:	
469,200,000 kilowatt-hours at 6.5 mills	$3,049,800
Less O.M. & R. costs	905,340
Net power revenues	2,144,460
Municipal and industrial water supply:	
Municipal supplies (20,500 acre-feet at $5.40)	110,700
Storage of Colorado Fuel & Iron Corp. water (4,000 acre-feet at $2)	8,000
Portion of conservancy district tax	210,000
Subtotal	328,700
Less O.M. & R. costs	11,620
Net water supply revenues	317,080
Delivery system:	
Colorado Springs facilities (10,000 acre-feet at $28.888)	288,880
Valley towns facilities (7,500 acre-feet at $54.09)	405,700
Subtotal	694,580
Less O.M. & R. costs	193,280
Net delivery system revenues	501,300
Total average annual net project revenues	3,857,345

The investment for municipal water in the basic project of $8,717,000 is scheduled into plant-in-service over fiscal years 1966 to 1973 in conformance with the anticipated rate of increase in water deliveries during the construction period. This allocation also is repaid with interest at 2.5 percent within 50 years—the last year being 2012 or the 46th year of study. In addition to revenues from water deliveries, a fixed annual share of $210,000 of conservancy district taxes is applied toward the retirement of the water supply costs. The combined net revenues applicable to this investment amount to $317,080. Upon completion of repayment of the allocated municipal water basic project cost, all net annual proceeds from the district tax are applied toward amortization of the irrigation allocation.

IRRIGATION REPAYMENT

Allocated irrigation costs of $65,826,000 are repaid without interest by $48,237,490 from water users and the conservancy district and by $17,588,510 from power revenues. The irrigation investment is scheduled into plant-in-service over a 6-year period ending in fiscal year 1972 which is 2 years before completion of construction of all project works. The total irrigation investment is retired in fiscal year 2025—the 53d year after the full investment is made.

CONCLUSION

As demonstrated by benefit-cost analysis, the Fryingpan-Arkansas project is a highly productive development. About 90 percent of the total project cost is reimbursable and over one-half of the repayable costs bears interest. Amortization of these costs is accomplished within the limitations established by proposed authorizing legislation.

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